SECTION SIX CUMULATIVE IMPACTS

Under NEPA, a cumulative impact is defined as an impact on the environment that results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or nonfederal) or person undertakes the other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR § 1508.7). Regulations of the Council on Environmental Quality (CEQ) state that cumulative impacts must be evaluated along with the direct and indirect effects of each alternative (40 CFR § 1508.7).

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6.1 Methodology

6.1.1 Cumulative Actions Addressed

This analysis addresses actions in the recent past, the present, and the reasonably foreseeable future that could combine with the proposed and connected actions to cause a significant impact. FEMA considers reasonably foreseeable actions to be actions with a reasonable expectation of occurring, such as a project for which planning has begun or funding has been obligated. FEMA has identified actions relevant to the cumulative impacts analysis from reviews of information available from the subapplicants and other government agencies. These actions include previously completed and ongoing fire risk reduction vegetation management projects similar to the proposed and connected actions and other actions that could have similar effects on soil disturbance or vegetation disturbance, along with additional future hazardous fire risk reduction projects EBRPD has identified as being needed in the general areas of the proposed and connected actions. The additional cumulative actions considered in this section also include the projects listed in Table 6.1-1.

6.1.2 Relevant Geographic Areas

The relevant geographic area for cumulative actions is the East Bay Hills region in which the proposed and connected actions would occur, as described in Section 1. The locations of the cumulative EBRPD projects and the additional projects listed in Table 6.1-1 are shown on Figures 6.1a through 6.1j. This cumulative analysis focuses more on geographic interaction of projects than on timing of interactions because the timing of many of the reasonably foreseeable future actions is uncertain. The analysis considers potential cumulative impacts in areas beyond the proposed, connected, and cumulative project areas, such as downstream segments of streams.

6.1.3 Analyzed Resources

Resources evaluated in this cumulative impact analysis include the resources discussed in Section 5 that could be adversely affected by the proposed and connected actions. These include biological resources, soil and water quality, air quality, climate, aesthetics, socioeconomics, and human health and safety. Not all resources could be adversely affected and thus not all resources are addressed in this analysis.

6.1.4 Evaluation of Cumulative Impacts on Resources

Cumulative effects are analyzed in this section utilizing the criteria and methodology identified for each resource area, discussed in Section 5, where the potential for an adverse effect was identified. This resource specific assessment methodology is utilized to consider both the no action alternative and the proposed and connected action's contribution to the cumulative condition for each resource area, to determine the magnitude of the cumulative impacts. When possible, the assessment of effects on a resource is based on a quantitative analysis, but many impacts are difficult to quantify. In these cases, a qualitative assessment of cumulative impacts is made.

Table 6.1-1. Additional Projects for Cumulative Impacts Analysis

Project Number	Area or Facility	Description	Timing	Location Relative to Proposed and Connected Project Areas	Figure That Shows Location
1	Anthony Chabot Equestrian Center	Connection of facility on Skyline Boulevard near Keller Avenue to sanitary sewer to eliminate pumpout and trucking of wastewater	On hold	In AC007 project areas	6-1i
2	Claremont Canyon Regional Preserve	New staging area for public access to Stonewall-Panoramic Trail through Claremont Canyon	2012-2013	In CC001 project areas	6-1f
3	I-80/San Pablo Dam Road interchange	Reconstruction of interchange to improve pedestrian and bicycle access	2014-2016	0.3 mile west of project area in Alvarado Park	6-1b
4	Lake Chabot Regional Park	Asphalt pavement repairs on Lake Chabot West Shore Trail on southwest shore of Lake Chabot near Lake Chabot Road	2012	Across lake from AC013-connected, 0.7 mile from LC010-proposed	6-1j
5	Miller/Knox Regional Shoreline	Closing a gap in the Plunge Bay Trail and a gap between the Shipyard 3 Trail and Brickyard Cove Road; construction of trail from Brickyard Landing to Dornan Drive	2012	West side of peninsula near project areas	6-1a
6	Shepherd Canyon, Oakland	Fuel management by modification of vegetation	2011-2013	0.5 mile from project areas	6-1h
7	Tilden Regional Park	Construction of visitor center for Golden Gate Live Steamers large-scale miniature railroad near South Park Drive north of Grizzly Peak Boulevard	2012-2013	In proposed project area TI015	6-1e
8	Tilden Regional Park Environmental Education Center	Improvement of sanitary sewer system, including new holding tank and lift station; upgrade of electrical power to facilities in the Environmental Education Center complex	2012-2013	End of Central Park Drive, north of TI006 project areas	6-1d, e
9	Tilden Regional Park Golf Course	Modification of bed of Wildcat Creek, including construction of rock step pools, and revegetation of creek bank	2012-2013	Extending southeast from connected project area TI021	6-1e
10	UCB Hill Campus	Long-range plan for expansion of Hill Campus facilities	Indefinite	In or near Strawberry Canyon-PDM, Frowning Ridge-PDM, and Claremont-PDM	6-1e, f
11	East Bay Municipal Utilities District land	Selective removal of 1,000 eucalyptus trees per year from ridgetop eucalyptus groves	Ongoing	Removed from communities affected by proposed and connected actions	6-1d, e, f, g, i, j


HAZARDOUS FIRE RISK
REDUCTION EIS
EAST BAY HILLS, CA
Cumulative Project Areas
Figure 6-1a
Proposed project areas
Connected project areas
Cumulative project areas
Project Area Letter Designations
AC = Anthony Chabot Regional Park
CC = Claremont Canyon Regional Preserve
HP = Huckleberry Botanic Regional Preserve
KG = Kennedy Grove Regional Recreational Area
LC = Lake Chabot Regional Park
LE = Leona Canyon Regional Open Space Preserve
MK = Miller/Knox Regional Shoreline
RD = Redwood Regional Park
SO = Sobrante Ridge Regional Preserve
SR = Sibley Volcanic Regional Preserve
TI = Tilden Regional Park
TM = Temescal Regional Recreation Area
WC = Wildcat Canyon Regional Park
0
750
1,500
3,000
Feet
HMGP 1731-16-34
General area of additional project 5
MK001
MK002
MK003
MK004
MK005
Point Richmond
Miller-Knox Regional Shoreline
Iron Triangle
Atchison Woods
Atchison Village
City Central
City Center
Santa Fe
Coronado
Cutting Blvd
Hoffman Blvd
Port Richmond-Terminal 2
Port Richmond-Terminal 3
Port Richmond-Point Potrero
Francisco Bay
San Francisco Bay
Brooks Island
Map Service: Microsoft BING
El Sobrante
San Pablo
Richmond
El Cerrito
Albany
Berkeley
Orinda
Lafayette
Moraga
Piedmont
Oakland
San Francisco
Alameda
San Leandro
1
2
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4
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6
7
8
9
10
Map Service: National Geographic World Map
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Figure 6-1a. Cumulative Project Areas

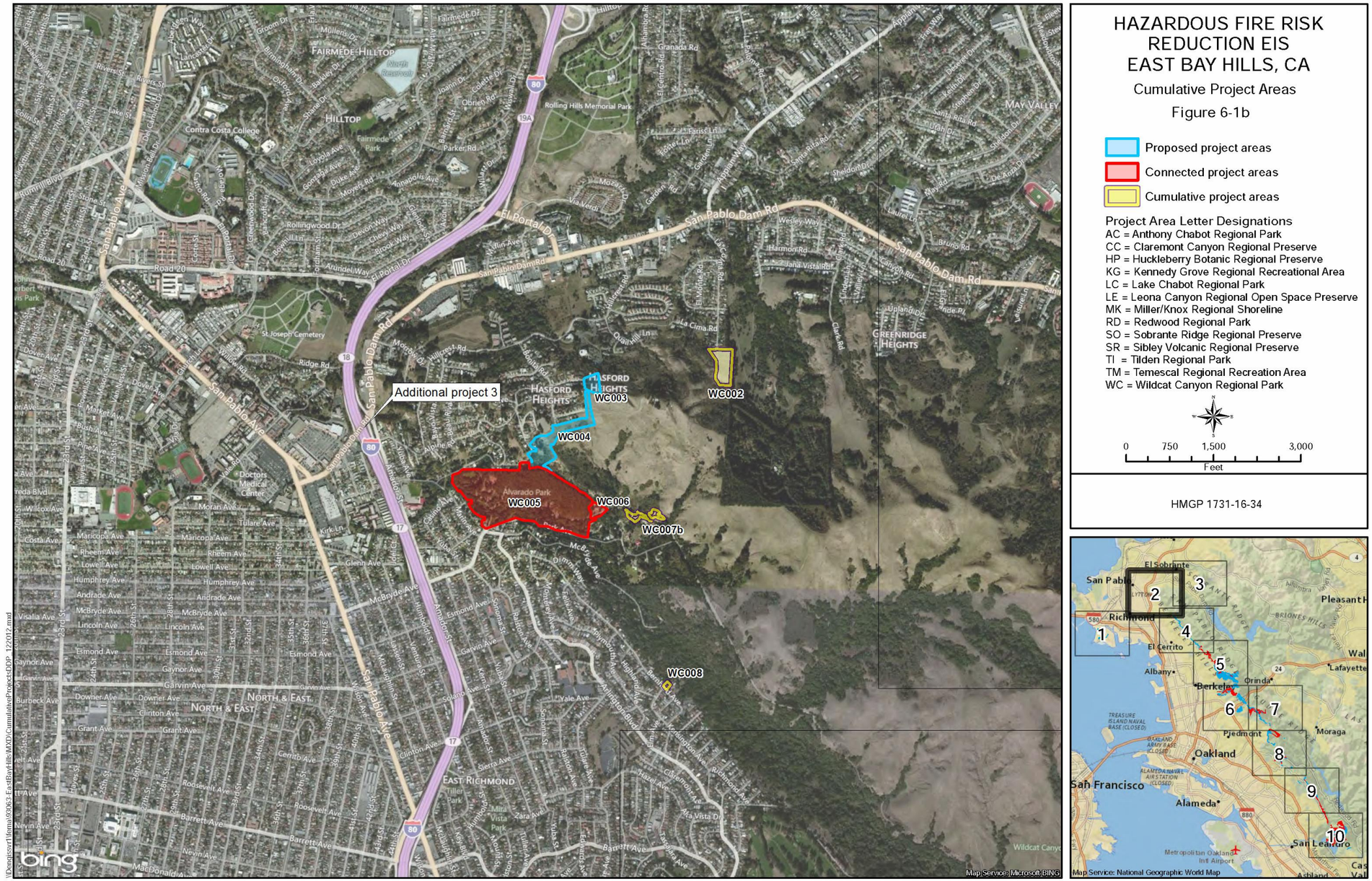


Figure 6-1b. Cumulative Project Areas

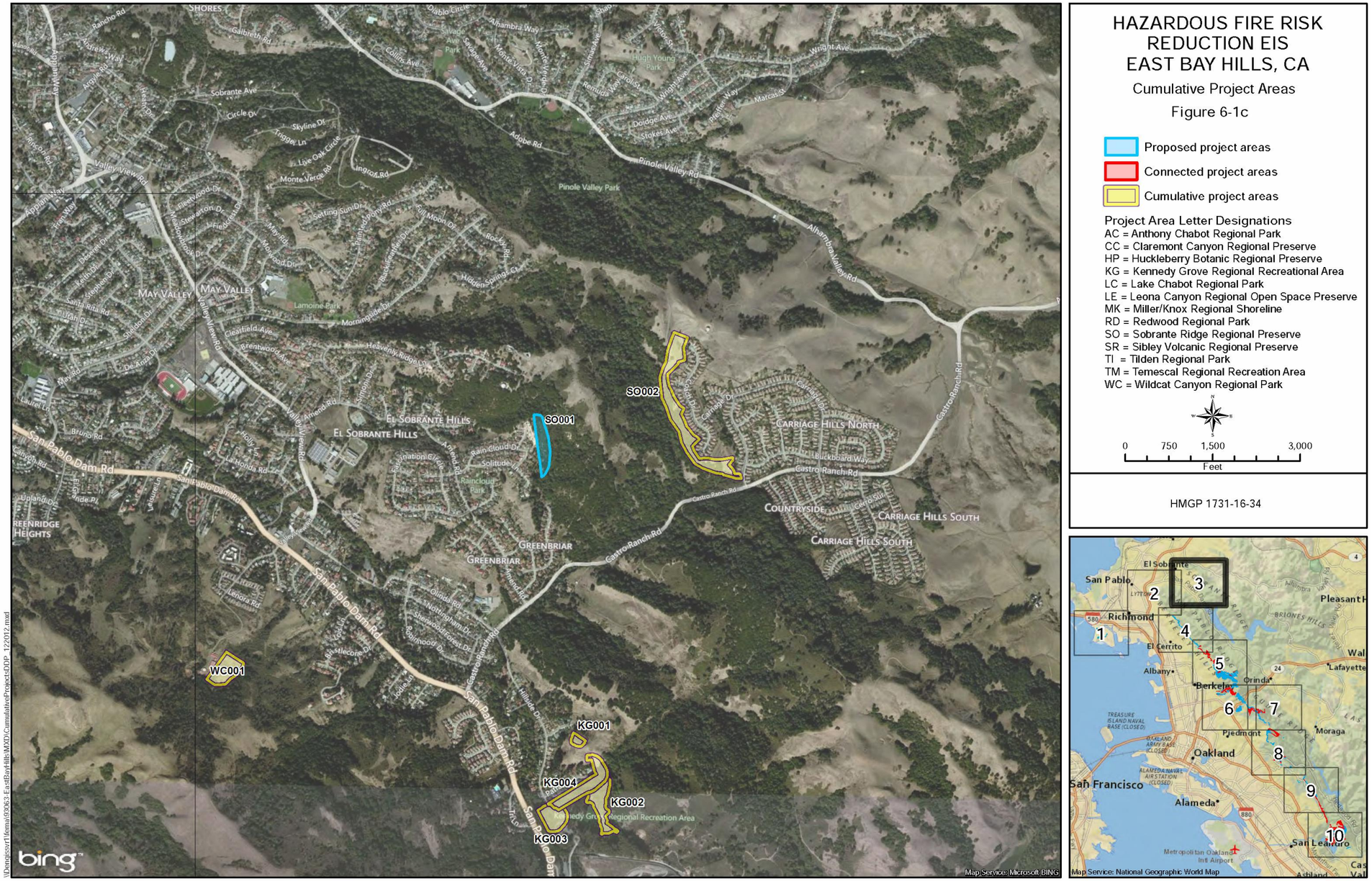
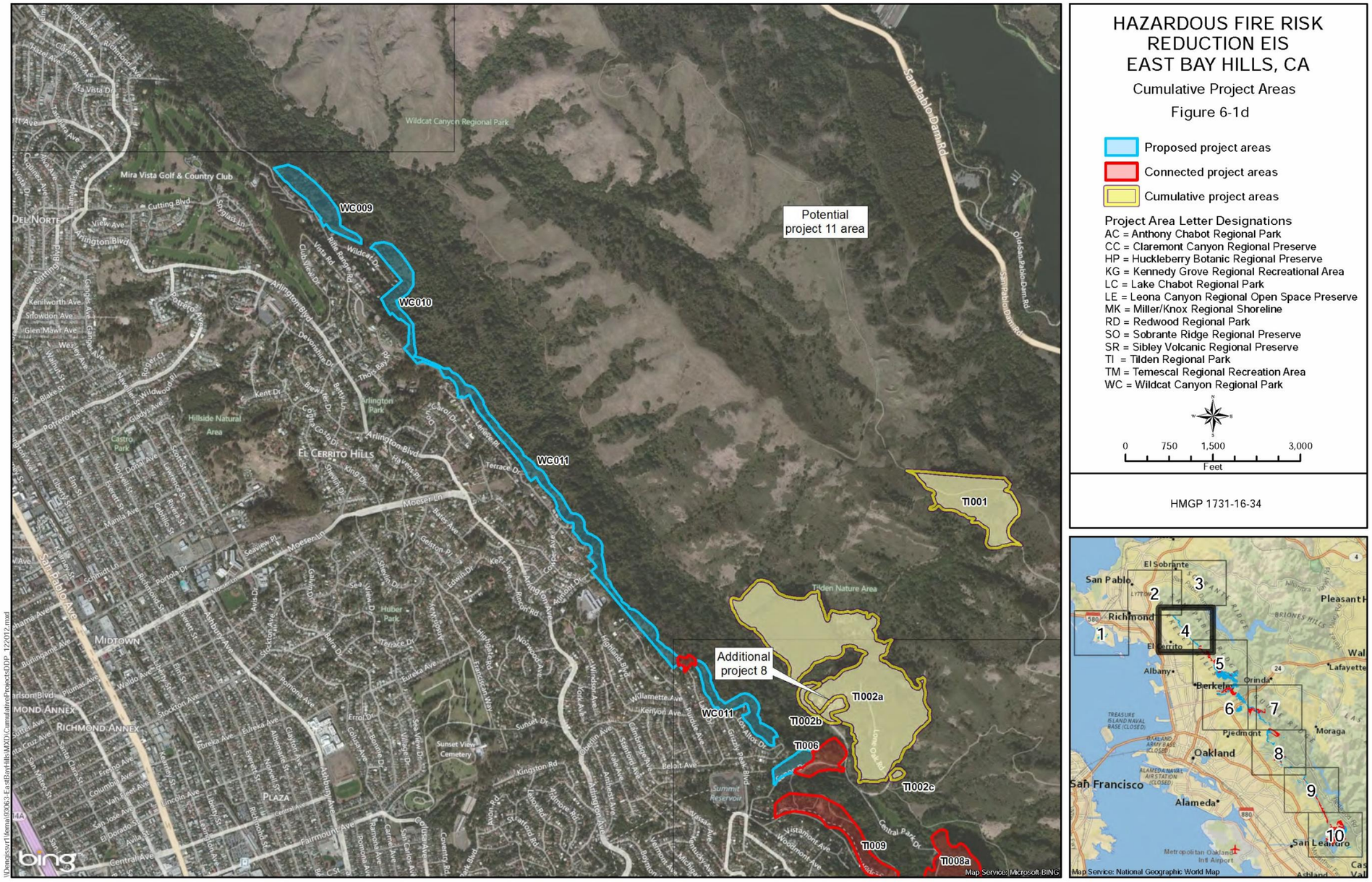


Figure 6-1c. Cumulative Project Areas



HAZARDOUS FIRE RISK REDUCTION EIS
EAST BAY HILLS, CA

Cumulative Project Areas

Figure 6-1d

Proposed project areas

Connected project areas

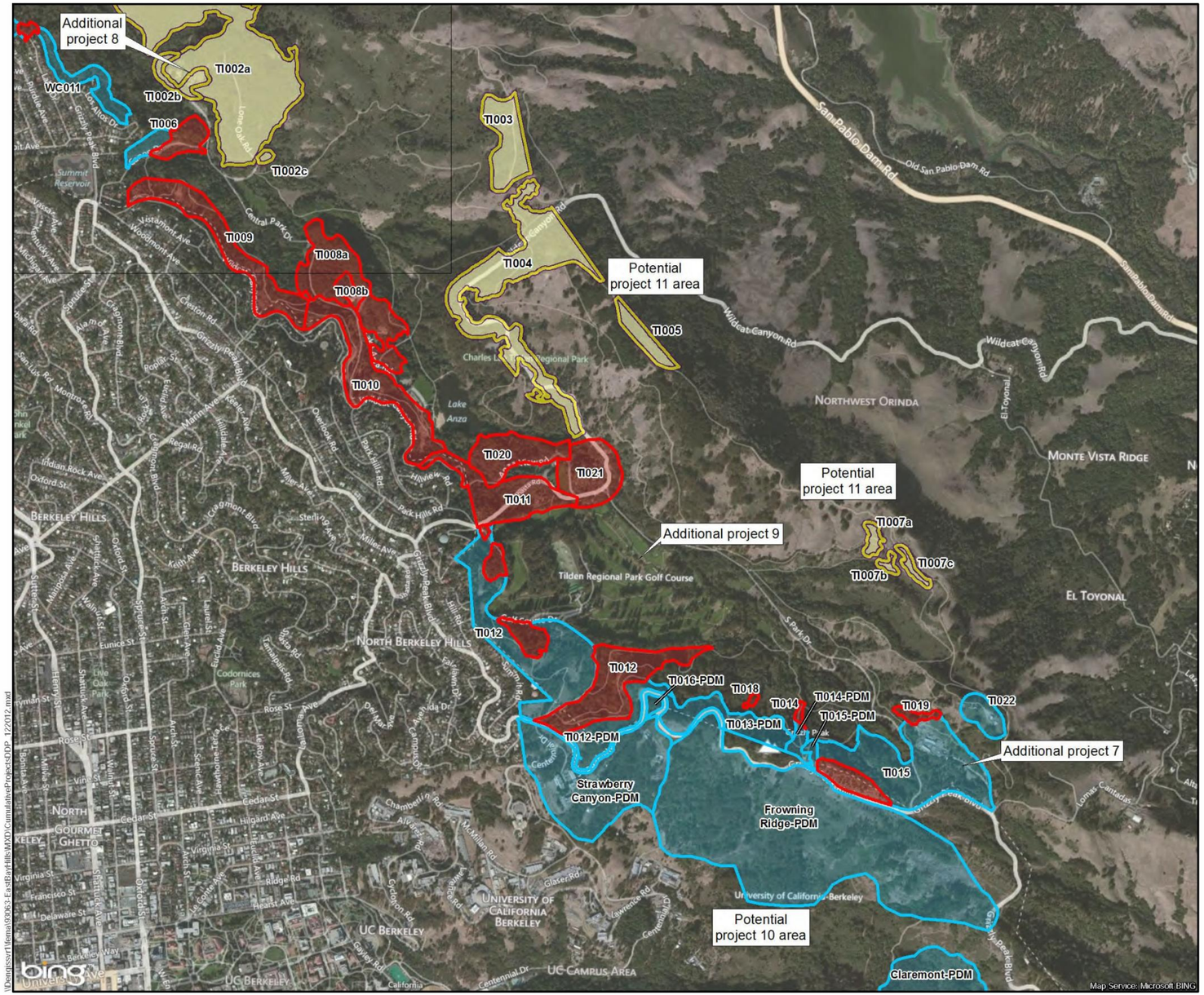
Cumulative project areas

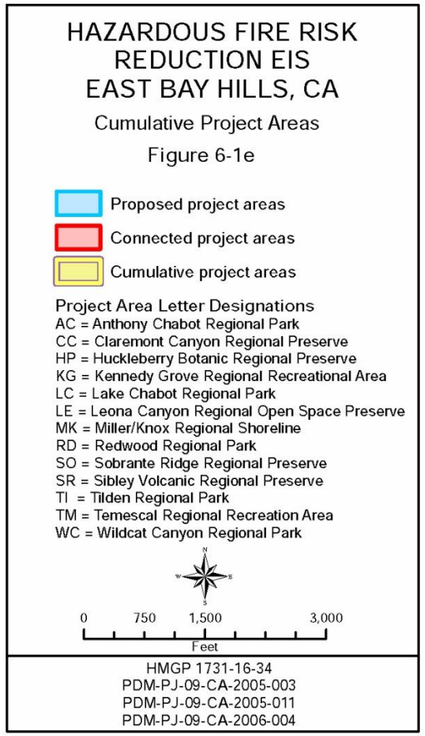
Project Area Letter Designations
AC = Anthony Chabot Regional Park
CC = Claremont Canyon Regional Preserve
HP = Huckleberry Botanic Regional Preserve
KG = Kennedy Grove Regional Recreational Area
LC = Lake Chabot Regional Park
LE = Leona Canyon Regional Open Space Preserve
MK = Miller/Knox Regional Shoreline
RD = Redwood Regional Park
SO = Sobrante Ridge Regional Preserve
SR = Sibley Volcanic Regional Preserve
TI = Tilden Regional Park
TM = Temescal Regional Recreation Area
WC = Wildcat Canyon Regional Park

0 750 1,500 3,000
Feet

HMGP 1731-16-34

Figure 6-1d. Cumulative Project Areas





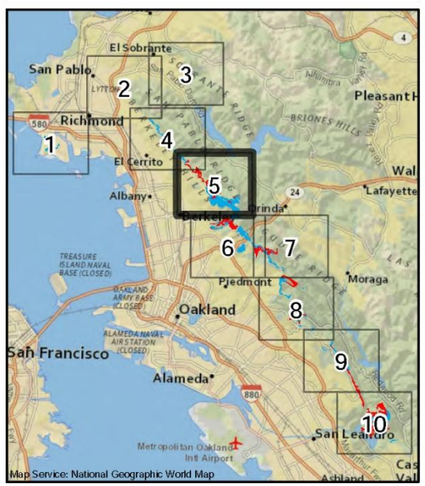


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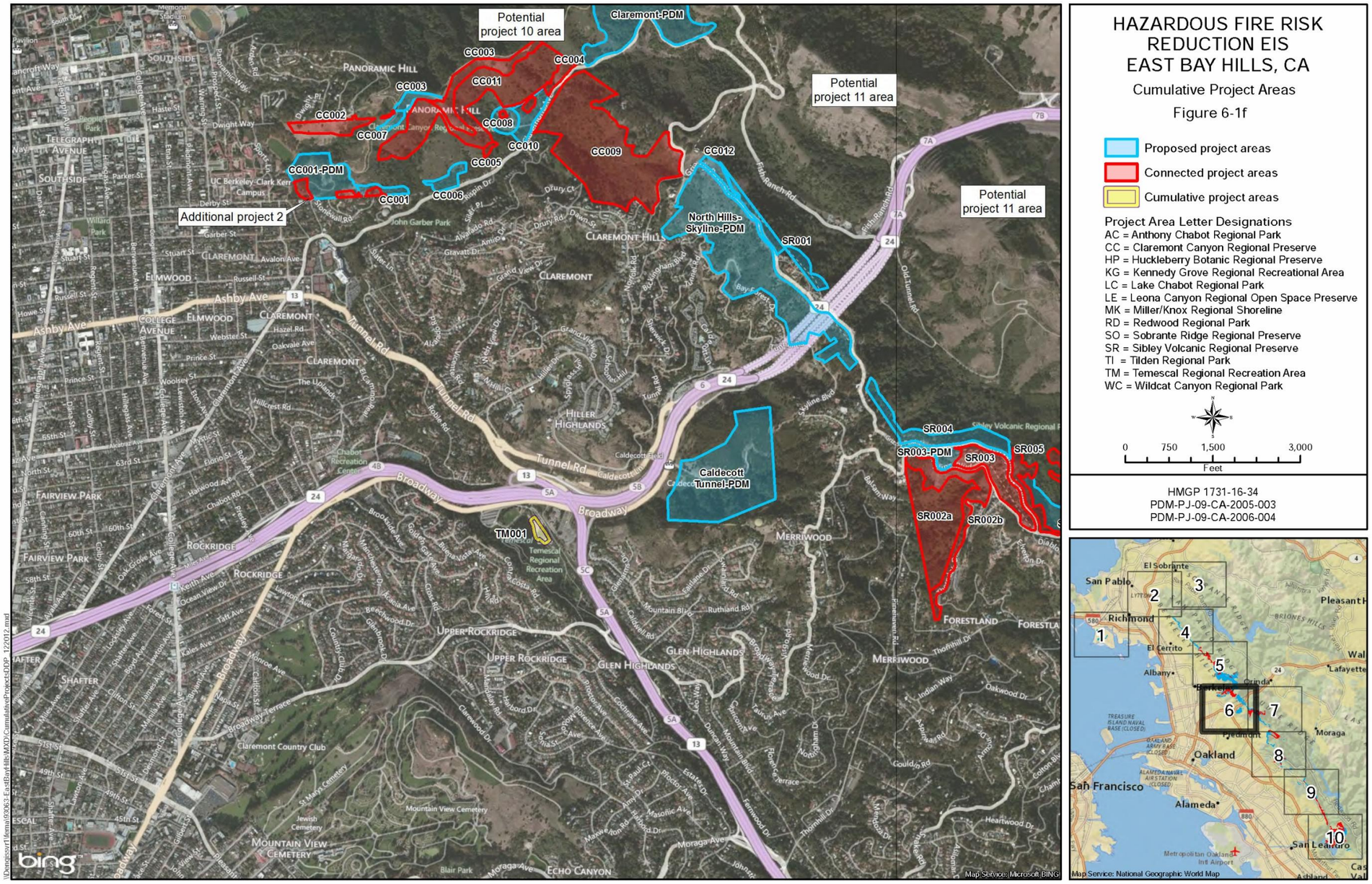
Figure 6-1e. Cumulative Project Areas



HAZARDOUS FIRE RISK REDUCTION EIS
EAST BAY HILLS, CA

Cumulative Project Areas

Figure 6-1f

Proposed project areas

Connected project areas

Cumulative project areas

Project Area Letter Designations
AC = Anthony Chabot Regional Park
CC = Claremont Canyon Regional Preserve
HP = Huckleberry Botanic Regional Preserve
KG = Kennedy Grove Regional Recreational Area
LC = Lake Chabot Regional Park
LE = Leona Canyon Regional Open Space Preserve
MK = Miller/Knox Regional Shoreline
RD = Redwood Regional Park
SO = Sobrante Ridge Regional Preserve
SR = Sibley Volcanic Regional Preserve
TI = Tilden Regional Park
TM = Temescal Regional Recreation Area
WC = Wildcat Canyon Regional Park

0 750 1,500 3,000
Feet

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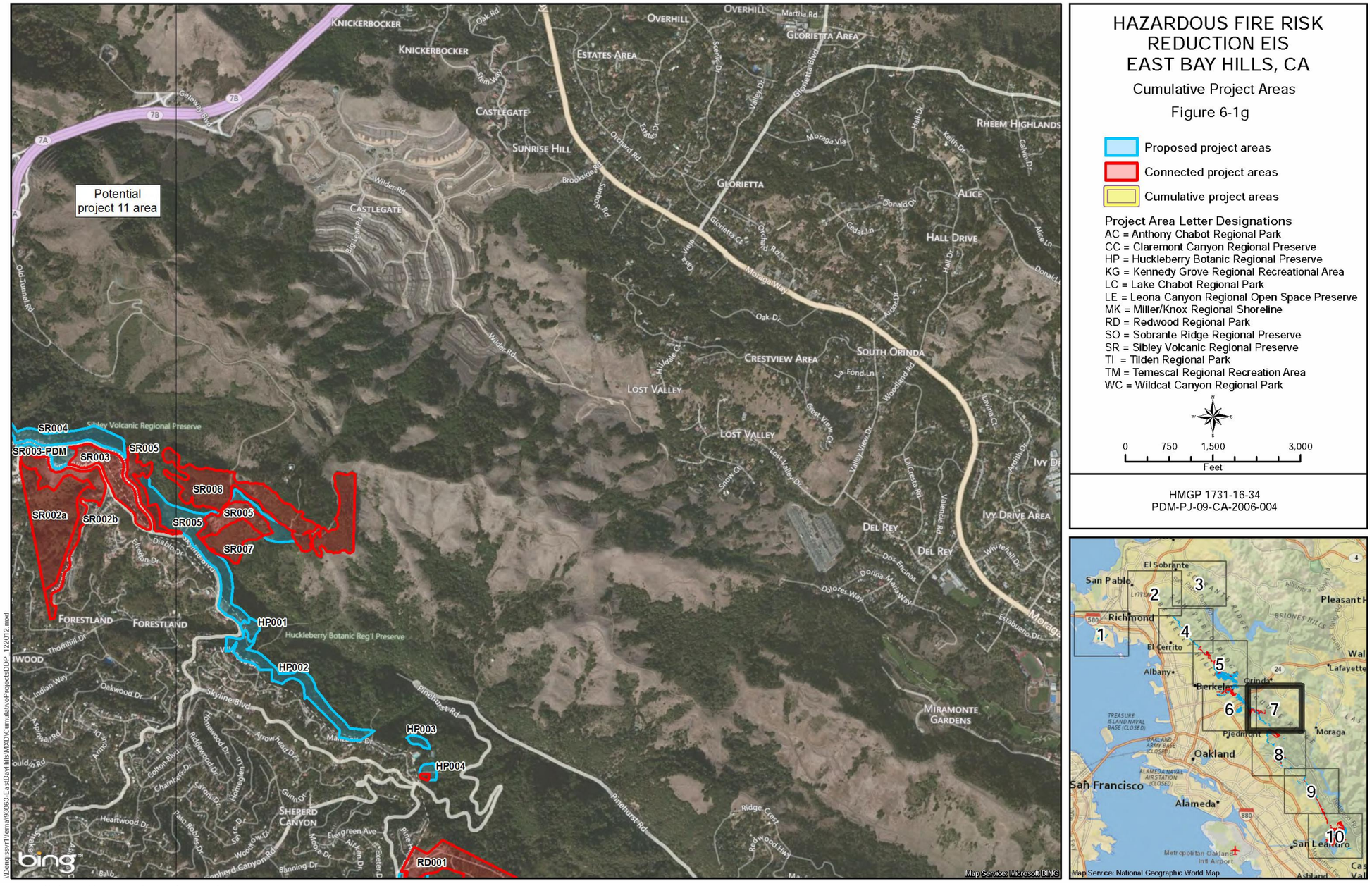
PDM-PJ-09-CA-2005-003
PDM-PJ-09-CA-2006-004

Figure 6-1f. Cumulative Project Areas



HAZARDOUS FIRE RISK REDUCTION EIS EAST BAY HILLS, CA

Cumulative Project Areas

Figure 6-1g

Proposed project areas

Connected project areas

Cumulative project areas

Project Area Letter Designations

AC = Anthony Chabot Regional Park
CC = Claremont Canyon Regional Preserve
HP = Huckleberry Botanic Regional Preserve
KG = Kennedy Grove Regional Recreational Area
LC = Lake Chabot Regional Park
LE = Leona Canyon Regional Open Space Preserve
MK = Miller/Knox Regional Shoreline
RD = Redwood Regional Park
SO = Sobrante Ridge Regional Preserve
SR = Sibley Volcanic Regional Preserve
TI = Tilden Regional Park
TM = Temescal Regional Recreation Area
WC = Wildcat Canyon Regional Park

0 750 1,500 3,000
Feet

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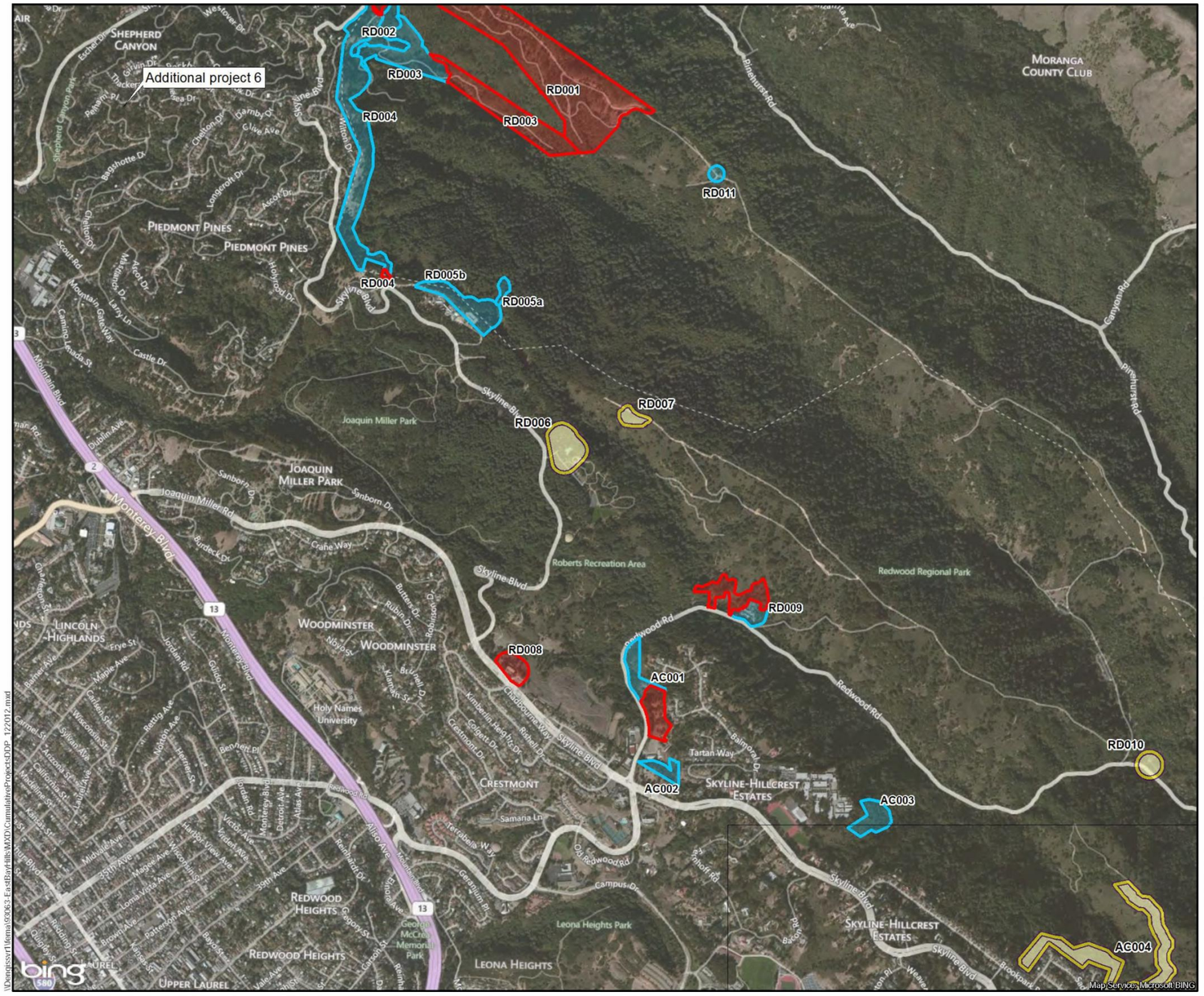
PDM-PJ-09-CA-2006-004

Figure 6-1g. Cumulative Project Areas



HAZARDOUS FIRE RISK REDUCTION EIS
EAST BAY HILLS, CA

Cumulative Project Areas

Figure 6-1h

Proposed project areas

Connected project areas

Cumulative project areas

Project Area Letter Designations
AC = Anthony Chabot Regional Park
CC = Claremont Canyon Regional Preserve
HP = Huckleberry Botanic Regional Preserve
KG = Kennedy Grove Regional Recreational Area
LC = Lake Chabot Regional Park
LE = Leona Canyon Regional Open Space Preserve
MK = Miller/Knox Regional Shoreline
RD = Redwood Regional Park
SO = Sobrante Ridge Regional Preserve
SR = Sibley Volcanic Regional Preserve
TI = Tilden Regional Park
TM = Temescal Regional Recreation Area
WC = Wildcat Canyon Regional Park

0 750 1,500 3,000
Feet

HMGP 1731-16-34

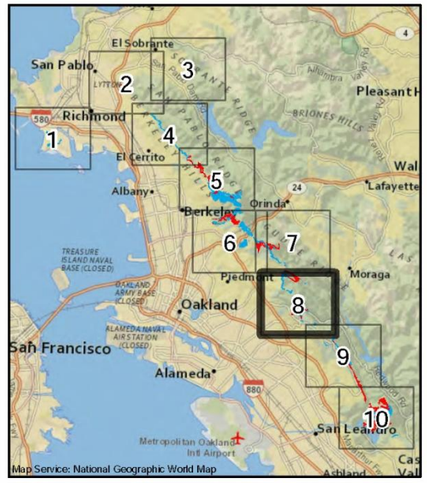
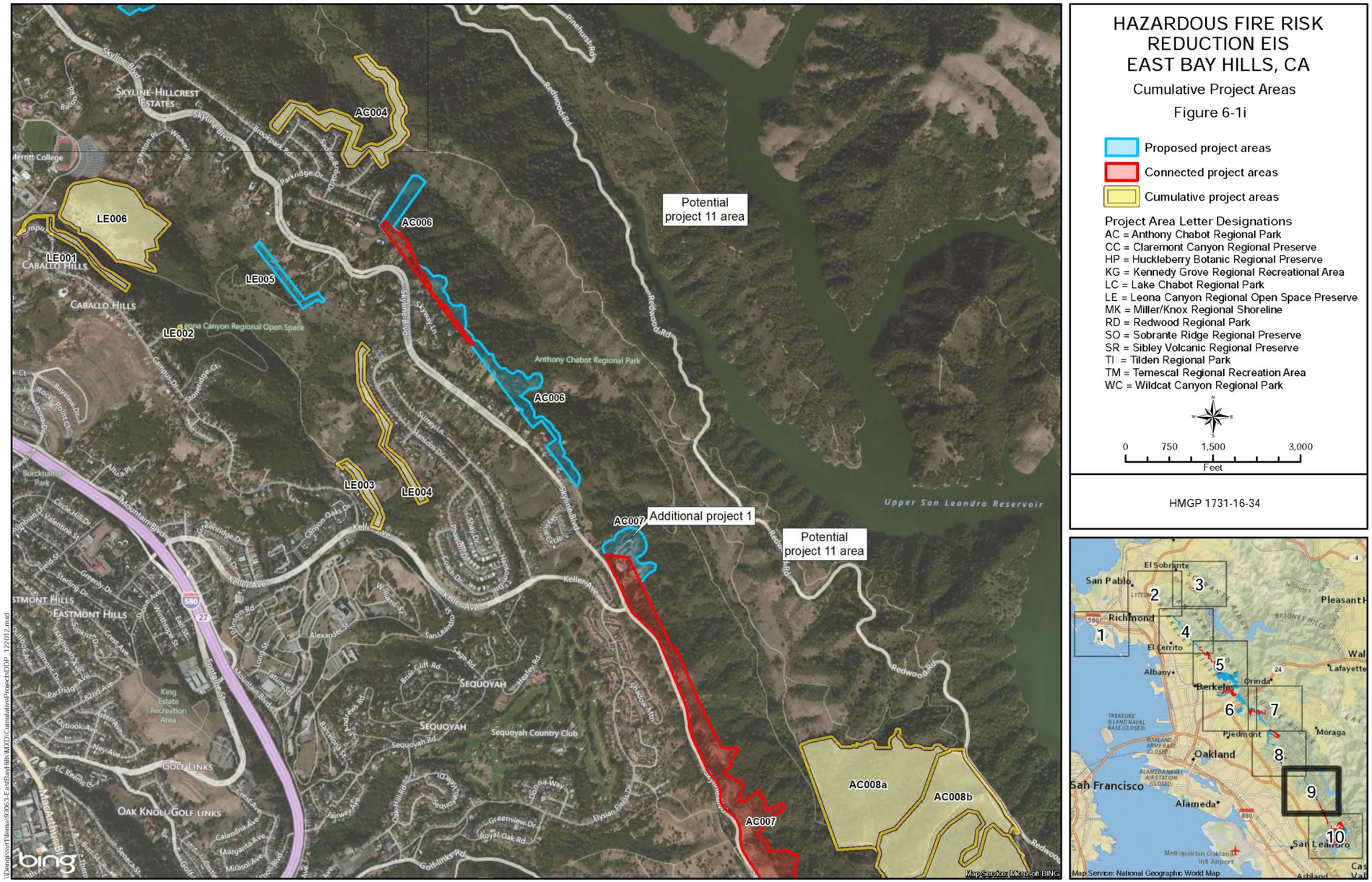


Figure 6-1h. Cumulative Project Areas



HAZARDOUS FIRE RISK REDUCTION EIS
EAST BAY HILLS, CA

Cumulative Project Areas

Figure 6-1i

Proposed project areas

Connected project areas

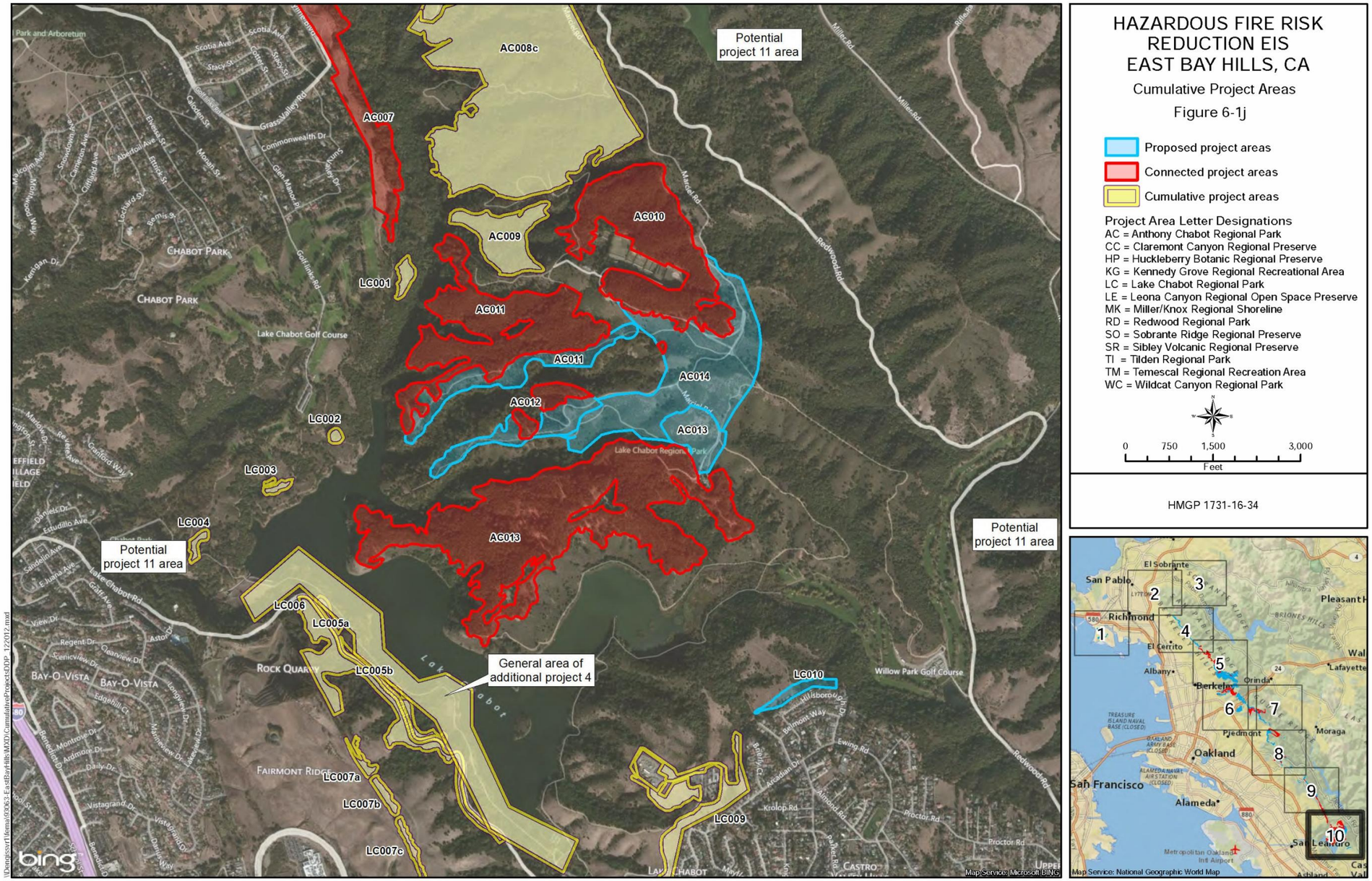
Cumulative project areas

Project Area Letter Designations
AC = Anthony Chabot Regional Park
CC = Claremont Canyon Regional Preserve
HP = Huckleberry Botanic Regional Preserve
KG = Kennedy Grove Regional Recreational Area
LC = Lake Chabot Regional Park
LE = Leona Canyon Regional Open Space Preserve
MK = Miller/Knox Regional Shoreline
RD = Redwood Regional Park
SO = Sobrante Ridge Regional Preserve
SR = Sibley Volcanic Regional Preserve
TI = Tilden Regional Park
TM = Temescal Regional Recreation Area
WC = Wildcat Canyon Regional Park

0 750 1,500 3,000
Feet

HMGP 1731-16-34

Figure 6-1i. Cumulative Project Areas



HAZARDOUS FIRE RISK REDUCTION EIS
EAST BAY HILLS, CA

Cumulative Project Areas

Figure 6-1j

Proposed project areas

Connected project areas

Cumulative project areas

Project Area Letter Designations
AC = Anthony Chabot Regional Park
CC = Claremont Canyon Regional Preserve
HP = Huckleberry Botanic Regional Preserve
KG = Kennedy Grove Regional Recreational Area
LC = Lake Chabot Regional Park
LE = Leona Canyon Regional Open Space Preserve
MK = Miller/Knox Regional Shoreline
RD = Redwood Regional Park
SO = Sobrante Ridge Regional Preserve
SR = Sibley Volcanic Regional Preserve
TI = Tilden Regional Park
TM = Temescal Regional Recreation Area
WC = Wildcat Canyon Regional Park

0 750 1,500 3,000
Feet

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Figure 6-1j. Cumulative Project Areas

6.2 Biological Resources

This section presents an evaluation of cumulative impacts on biological resources from the implementation of the proposed and connected actions in combination with other cumulative projects. Based on the analysis presented in Section 4.2.3.4.3, there is no essential fish habitat (EFH) in the proposed or connected project areas so there would be no impacts; therefore, impacts on EFH are not included in the cumulative impacts analysis.

For federally listed species, the geographic extent of the impact analysis in the biological assessment (BA) prepared in consultation with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) considered a larger area for the amount of suitable habitat and the importance of that habitat for survival of the federally listed species. For the more common wildlife and plants, it was considered appropriate for this EIS to use the same geographical extent for the cumulative effects analysis as that for the analysis of impacts from the proposed and connected actions because these populations are not solely dependent on the habitat within the proposed and connected areas and are not considered to be in jeopardy for any loss or alteration of that habitat.

6.2.1 Vegetation and Wildlife

6.2.1.1 No Action Alternative

Under the no action alternative, there would be no changes to vegetation and wildlife from existing conditions. Therefore, there would be no cumulative impacts.

6.2.1.2 Proposed and Connected Actions

Implementation of the proposed and connected actions could have impacts on vegetation and wildlife, and some of the cumulative projects listed in Table 6.1-1 could occur at the same time and area as the proposed and connected actions. Together, these projects could result in significant cumulative effects on vegetation and wildlife.

Several of the projects (Anthony Chabot and Tilden Regional Park) would involve work in areas that are already developed and would be unlikely to have significant effects on vegetation and wildlife. Projects at UCB and Claremont Canyon are not well defined with respect to their locations at this time but could have the potential to affect vegetation and wildlife. However, potential UCB building expansion within habitat for listed species would be highly constrained by steep slopes and would likely be limited to modest expansion of existing structures located in developed/disturbed areas. A new staging area for access to Claremont Canyon could have the potential to affect vegetation and wildlife although it would represent a small area and would be located close to existing roads and infrastructure. Therefore, impacts on vegetation and wildlife would not be expected to be significant.

The proposed and connected actions would implement best management practices (BMPs) and mitigation measures as outlined in Section 5.1 to avoid or reduce impacts on vegetation and wildlife. Therefore, with implementation of BMPs and mitigation measures, the proposed and connected action's incremental contribution to significant cumulative impacts on vegetation and wildlife would not be cumulatively considerable.

6.2.2 Sensitive Biological Resources in the Proposed and Connected Project Areas

6.2.2.1 Special Status Wildlife Species and Critical Habitat

6.2.2.1.1 No Action Alternative

Under the no action alternative, there would be no changes to habitat for special status wildlife species from existing conditions and no change to potential for direct or indirect impacts. Therefore, there would be no cumulative impacts.

6.2.2.1.2 Proposed and Connected Actions

Implementation of the proposed and connected actions could have adverse impacts on special-status wildlife and critical habitat for Alameda whipsnake (AWS) (the only species with designated critical habitat in the area), and some of the cumulative projects listed in Table 6.1-1 could occur at the same time and area as the proposed and connected actions. Together, these projects could result in significant cumulative effects on special-status wildlife and critical habitat for AWS. Although the proposed and connected actions would implement BMPs and mitigation measures as outlined in Section 5.1 to avoid or reduce impacts on special-status wildlife and critical habitat for AWS, there would still be some impacts based on the analysis conducted for the BA as required by the Endangered Species Act. Therefore, the proposed and connected action's incremental contribution to significant cumulative impacts on special-status wildlife and critical habitat for AWS could be cumulatively considerable.

6.2.2.2 Special Status Plants and Critical Habitat

6.2.2.2.1 No Action Alternative

Under the no action alternative, there would be no changes to habitat for special status plant species from existing conditions and no change to potential for direct or indirect impacts. Therefore, there would be no cumulative impacts.

6.2.2.2.2 Proposed and Connected Actions

Implementation of the proposed and connected actions could have impacts on special-status plants, and some of the cumulative projects listed in Table 6.1-1 could occur at the same time and area as the proposed and connected actions. Together, these projects could result in significant cumulative effects on special-status plants. However, the proposed and connected actions would implement BMPs and mitigation measures as outlined in Section 5.1 to avoid or reduce impacts on special-status plants. Therefore, with implementation of BMPs and mitigation measures, the proposed and connected action's incremental contribution to significant cumulative impacts on special-status plants would not be cumulatively considerable. There is no designated critical habitat for special-status plants within the cumulative project area, so there would be no cumulative impacts on critical habitat.

6.2.3 Wildlife Movement Corridors

6.2.3.1 No Action Alternative

Under the no action alternative, there would be no changes to wildlife movement corridors. Therefore, there would be no cumulative impacts.

6.2.3.2 Proposed and Connected Actions

Implementation of the proposed and connected actions could have temporary impacts on wildlife movement corridors during implementation, and some of the cumulative projects listed in Table 6.1-1 could occur at the same time and in the same area as the proposed and connected actions. Together, these projects could result in significant cumulative effects on wildlife movement corridors. However, temporary construction fencing and exclosures used as protective measures for wildlife would be removed following implementation of the proposed and connected actions, and no permanent fences or barriers to wildlife movement would be installed. Therefore, impacts on wildlife movement and migration corridors would not be significant, and the proposed and connected action's incremental contribution to significant cumulative impacts on wildlife movement corridors would not be cumulatively considerable.

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6.3 Soil and Water Quality

The cumulative EBRPD project areas are shown in Figures 6.1a through 6.1j. The cumulative project areas listed in Table 6.3-1 are within 50 feet of a stream or lake.

Table 6.3-1. Cumulative Project Areas Within 50 Feet of a Stream or Lake

Park/Location	Polygon Number	Acres	Watershed Name
Anthony Chabot Regional Park	AC004	23.5	San Leandro Creek
Anthony Chabot Regional Park	AC008a	70.1	San Leandro Creek
Anthony Chabot Regional Park	AC009	24.8	San Leandro Creek
Kennedy Grove Regional Recreation Area	KG003	3.7	San Pablo Creek
Kennedy Grove Regional Recreation Area	KG004	6.1	San Pablo Creek
Redwood Regional Park	RD010	2.9	San Leandro Creek
Temescal Regional Recreation Area	TM001	1.5	Cerrito Creek
Tilden Regional Park	TI002a	109.0	Pinole Creek
Tilden Regional Park	TI002b	5.2	Pinole Creek
Tilden Regional Park	TI007b	1.3	Pinole Creek

The cumulative EBRPD vegetation management projects are similar to the proposed and connected actions. Many of them would occur adjacent or close to proposed or connected project areas. Like EBRPD's proposed and connected actions, the cumulative EBRPD projects are among the vegetation management projects in EBRPD's *Wildfire Hazard Reduction and Resource Management Plan* (EBRPD 2009b). EBRPD's proposed, connected, and cumulative actions are intended to work together to reduce wildfire hazard.

Other potential projects in the vicinity of the proposed and connected project areas that could contribute to erosion and sedimentation of area streams through construction, repair, and vegetation management efforts are shown in Table 6.1-1.

Cumulative impacts associated with the proposed, connected, and cumulative actions are most likely to be caused by erosion and sedimentation and by effects of herbicide use on surface water. These potential sources of cumulative impact are discussed in the two following subsections.

6.3.1 Erosion and Sedimentation

Cumulative impacts to water quality from erosion and subsequent sedimentation associated with the proposed, connected, and cumulative actions are not expected to be significant. Each category of action would require several years, and it is likely that the connected actions would follow the proposed actions, and the cumulative actions would follow the connected actions. Vegetation in one set of project areas would be recovering during reduction of vegetation in the next set. The same types of best management practices would be implemented as part of the cumulative projects as would be implemented in the proposed and connected actions (see Section 5.4.4).

Similarly, the projects listed in Table 6.1-1 would be implemented over several years and would be subject to similar requirements for implementation of best management practices to minimize

erosion and sedimentation. Projects in the table that would disturb significant areas of soil would be subject to permitting under the National Pollutant Discharge Elimination System.

Studies of a variety of landscapes both before and after large wildfires show that erosion rates and sedimentation of streams increase dramatically following a burn (Jackson & Roering 2008). The cumulative EBRPD vegetation management projects and projects 6 and 11 in Table 6.1-1 would combine with the proposed and connected actions to further reduce the likelihood of a large and intense wildfire in the East Bay Hills. This would further reduce the likelihood of erosion and sedimentation associated with a major wildfire.

6.3.2 Herbicide Use

Herbicide use in the proposed and connected actions is subject to extensive restrictions described in Section 5.4.4.2. The purpose of many of these restrictions is to protect sensitive aquatic organisms. Herbicide use in the cumulative EBRPD projects and in the two vegetation management projects in Table 6.1-1 would be subject to similar restrictions.

The analysis of the potential effects of herbicide use on water quality in Appendix L indicates that the proposed and connected actions would not have a significant effect. It is unlikely that EBRPD's cumulative projects would occur during the same years as the proposed and connected actions, and the herbicides EBRPD uses, Garlon 4 Ultra and Garlon 3A, degrade rapidly in water (see Appendix L). Garlon 3A is formulated specifically for use in aquatic environments. It is therefore unlikely that EBRPD's cumulative projects would combine with the proposed and connected actions to cause a significant adverse impact to water resources.

The East Bay Municipal Utilities District's removal of 1,000 eucalyptus per year, project 11 in Table 6.1-1, would occur on ridgetops, away from streams, and any use of herbicides on the eucalyptus stumps would be subject to restrictions designed to protect the water resources the district manages. Vegetation management in Shepherd Canyon, project 6 in Table 6.1-1, would be relatively small in scale and would occur 0.5 mile from the nearest proposed, connected, or EBRPD cumulative action. These projects would be unlikely to combine with the proposed and connected actions and the EBRPD cumulative actions to cause a significant adverse impact on water resources.

6.4 Air Quality

This section summarizes the air pollutant emissions associated with the cumulative actions listed in Section 6.1. A number of cumulative actions include additional hazardous fire risk reduction projects EBRPD has identified as being needed in the general areas of the proposed and connected actions. These additional hazardous fire risk reduction projects are assumed, for this analysis, to occur during the same 10-year period as the proposed and connected actions. Section 6.1 also lists 11 projects that are either not hazardous fire risk reduction projects or would not be performed by EBRPD. The emissions from these cumulative projects have been quantified following the methodology summarized in Section 5.5.

The resulting cumulative project emissions are then combined with the proposed and connected action emissions quantified in Section 5.5. The combined total of proposed, connected, and cumulative action emissions are compared to the significant emission thresholds identified in Section 4.6. Estimated criteria pollutant emissions from the additional hazardous fire risk reduction projects identified by EBRPD are summarized in Table 6.4-1. Estimated criteria pollutant emissions for the 11 additional cumulative projects, by project area, are presented in Table 6.4-2.

Table 6.4-1. Cumulative Hazardous Fire Risk Reduction Action Emissions by Project Area

	Total Emissions (tons)					
Project Area	**CO**	**VOC**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
UCB-Claremont Canyon	0.00	0.00	0.00	0.00	0.00	0.00
UCB-Strawberry Canyon	0.00	0.00	0.00	0.00	0.00	0.00
UCB-Frowning Ridge	0.00	0.00	0.00	0.00	0.00	0.00
Oakland - North Hills Skyline	0.00	0.00	0.00	0.00	0.00	0.00
Oakland - Caldecott Tunnel	0.00	0.00	0.00	0.00	0.00	0.00
EBRPD - Anthony Chabot Regional Park	100.61	14.60	16.42	0.02	12.50	10.29
EBRPD - Claremont Canyon Regional Preserve	0.00	0.00	0.00	0.00	0.00	0.00
EBRPD - Huckleberry Botanic Regional Preserve	0.00	0.00	0.00	0.00	0.00	0.00
EBRPD - Kennedy Grove Regional Recreation Area	1.89	0.21	0.14	0.00	0.18	0.15
EBRPD - Lake Chabot Regional Park	22.75	3.05	2.53	0.00	2.50	2.18
EBRPD - Leona Canyon Regional Open Space	4.11	0.41	0.26	0.00	0.38	0.27
EBRPD - Miller/Knox Regional Shoreline	0.00	0.00	0.00	0.00	0.00	0.00
EBRPD - Redwood Regional Park	1.92	0.26	0.31	0.00	0.24	0.19
EBRPD - Sibley Volcanic Regional Preserve	0.00	0.00	0.00	0.00	0.00	0.00
EBRPD - Sobrante Ridge Regional Preserve	0.13	0.01	0.01	0.00	0.01	0.01
EBRPD - Temescal Regional Recreation Area	0.02	0.00	0.00	0.00	0.00	0.00
EBRPD - Tilden Regional Park	63.55	8.49	9.81	0.01	7.70	6.41
EBRPD - Wildcat Canyon Regional Park	0.58	0.08	0.12	0.00	0.09	0.06
Cumulative Actions Totals	**195.57**	**27.12**	**29.59**	**0.03**	**23.61**	**19.57**

VOC = volatile organic compounds
CO = carbon monoxide
NOx = nitrogen oxides

PM-10 = particulate matter less than 10 micrometers
PM-2.5 = particulate matter less than 2.5 micrometers
SO_x= sulfur oxides

Table 6.4-2. Other Cumulative Project Criteria Pollutant Emissions by Project Area

	Activity Total Emission (tons)					
Facility	**CO**	**VOC**	**NOx**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
1. Anthony Chabot Equestrian Center	0.85	0.06	0.36	0.00	0.22	0.05
2. Claremont Canyon Stonewall-Panoramic trail	0.27	0.01	0.09	0.00	0.11	0.02
3. I-80/San Pablo Dam Road interchange	12.09	0.81	4.45	0.01	10.10	1.36
4. Lake Chabot West Shore Trail paving	0.47	0.02	0.08	0.00	0.05	0.01
5. Miller-Knox Regional Shoreline trail completion	0.11	0.00	0.00	0.00	0.04	0.00
6. Shepard Canyon, Oakland, fuel management	0.26	0.01	0.01	0.00	0.16	0.02
7. Tilden - Golden Gate Live Steamers	0.18	0.01	0.01	0.00	0.08	0.01
8. Tilden Environmental Education Center	0.85	0.06	0.36	0.00	0.22	0.05
9. Tilden Regional Golf Course–Wildcat Creek	0.30	0.02	0.14	0.00	1.77	0.19
10. UCB Hill Campus	Not calculated, no schedule - too speculative at this time.					
11. EBMUD Eucalyptus management	0.68	0.11	0.79	0.00	0.06	0.04
Total Other Cumulative Project Emissions	**16.05**	**1.12**	**6.30**	**0.01**	**12.81**	**1.75**

In Section 5.5, it was assumed that the proposed action and connected actions would be completed during one 10-year program period. Since the additional hazardous fire risk reduction actions and 11 other cumulative projects analyzed could occur during the same general time period, the annualized cumulative project emissions have been added to those from the proposed and connected actions to determine total cumulative impacts, as summarized in Table 6.4-3. Note that it was conservatively assumed that the cumulative projects would all be completed in the same 3-year period as the proposed action.

Table 6.4-3. Annualized Cumulative Emissions

	Annual Emissions (tons/year)					
Project Area	**CO**	**VOC**	**NOx**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Fire Risk Reduction Cumulative Actions	19.56	2.71	2.96	0.00	2.36	1.96
11 Other Cumulative Projects	1.60	0.11	0.63	0.00	1.28	0.17
Proposed Action Totals	8.80	1.16	2.19	0.00	1.25	0.80
Connected Action Totals	18.24	2.43	2.87	0.00	2.19	1.74
Combined Proposed, Connected, and Cumulative Action and Project Totals	**48.21**	**6.41**	**8.64**	**0.01**	**7.08**	**4.67**

Comparing these totals to the thresholds listed in Table 4.6-4 indicates that none of the criteria pollutant emissions would exceed the significance thresholds when the proposed and connected action emissions are combined with cumulative action and project emissions. Therefore, cumulative impacts of criteria pollutants would be less than significant.

6.5 Climate Change and Greenhouse Gases

This section summarizes the greenhouse gas emissions (GHGs) associated with the cumulative actions listed in Section 6.1. The resulting cumulative action emissions are then combined with the proposed and connected action emissions quantified in Section 5.6, and the total of proposed, connected and cumulative action emissions are compared to the significant emission thresholds identified in Section 4.7.

The methodology used to develop the emissions from the cumulative actions is the same as that for the proposed and connected actions. The methodology is summarized in Sections 5.5 and 5.6.

Estimated GHGs for the cumulative actions, by project area, are presented in Table 6.5-1. The additional emissions associated with the proposed and connected actions are also presented in this table, and the combined proposed, connected, and cumulative action emissions are compared to the criteria pollutant emission thresholds presented in Section 4.7.

Table 6.5-1. Cumulative Action GHG Emissions by Project Area and Total GHG Emissions from Proposed, Connected, and Cumulative Actions

Facility or Location	Total Emissions (metric tons)			
	CO_2	N_2O	CH_4	CO_2eq
Cumulative Actions Related to Hazardous Fire Risk Reduction				
EBRPD - Anthony Chabot Regional Park	1,337.36	0.417	4.261	1,556.21
EBRPD - Kennedy Grove Regional Recreation Area	4.33	0.007	0.061	7.75
EBRPD - Lake Chabot Regional Park	134.08	0.095	0.910	182.50
EBRPD - Leona Canyon Regional Open Space Preserve	13.01	0.004	0.103	16.28
EBRPD - Redwood Regional Park	24.83	0.008	0.079	29.04
EBRPD - Sobrante Ridge Regional Preserve	0.51	0.000	0.004	0.74
EBRPD - Temescal Regional Recreation Area	0.39	0.000	0.000	0.40
EBRPD - Tilden Regional Park	772.15	0.270	2.639	911.27
EBRPD - Wildcat Canyon Regional Park	11.43	0.002	0.023	12.58
Subtotal for Fire Risk Reduction Cumulative Actions	**2,298.09**	**0.803**	**8.080**	**2,716.75**
Other Cumulative Actions in Project Vicinity				
1. Anthony Chabot Equestrian Center	53.40	0.002	0.005	54.04
2. Claremont Canyon Stonewall/Panoramic	17.75	0.001	0.001	18.00
3. I-80/San Pablo Dam Road	606.61	0.022	0.059	614.73
4. Lake Chabot West Shore Trail	11.62	0.001	0.001	11.84
5. Miller/Knox Regional Shoreline	3.38	0.000	0.000	3.47
6. Shepard Canyon	12.31	0.001	0.001	12.59
7. Tilden - Golden Gate Live Steamers	5.99	0.001	0.000	6.16
8. Tilden Environmental Education Center	53.40	0.002	0.005	54.04
9. Tilden Regional Golf Course	22.74	0.001	0.001	23.01
10. UCB	Not calculated, no schedule - too speculative at this time.			
11. East Bay Municipal Utility District	121.98	0.001	0.008	122.45
Subtotal for Other Cumulative Actions	**909.17**	**0.030**	**0.081**	**920.33**
TOTAL CUMULATIVE ACTION EMISSIONS	**3,207.26**	**0.834**	**8.162**	**3,637.08**
Proposed and Connected Action Totals (from Section 5.6)	**5,069.47**	**0.905**	**10.095**	**5,562.06**
Combined Proposed, Connected and Cumulative Action Totals	**8,276.73**	**1.739**	**18.257**	**9,199.14**

CO_2 = carbon dioxide CH_4 = methane
N_2O = nitrous oxide CO_2eq = carbon dioxide equivalent

Table 6.5-2 summarizes the annualized GHG emissions for proposed, connected and cumulative actions.

Table 6.5-2. Annualized Cumulative GHG Emissions

Category	Annual Emissions (metric tons/year)			
	CO_2	N_2O	CH_4	CO_2eq
Additional Fire Risk Reduction Cumulative Actions	229.81	0.080	0.808	271.68
Other Cumulative Projects	90.92	0.003	0.008	92.03
Proposed Action	259.77	0.021	0.301	272.63
Connected Actions	247.18	0.069	0.708	283.58
Decomposition of Existing Conditions Vegetation	1,500.00	--	--	1,500.00
Total Cumulative GHG Emissions	**2327.67**	**0.174**	**1.826**	**2419.91**

CO_2 = carbon dioxide CH_4 = methane
N_2O = nitrous oxide CO_2eq = carbon dioxide equivalent

The GHGs are roughly 2,400 metric tons per year, which is less than the 25,000 metric tons per year threshold for quantification listed in the Council on Environmental Quality (CEQ) draft guidance (CEQ 2010). It should be noted that the emission of carbon dioxide ($CO_{2)}$ from burning was not calculated since the removal of this vegetation will allow new vegetation to grow, eventually consuming the CO_2 released during burning as noted in EPA emission factor guidance (EPA 1996). The emissions of nitrous oxide (N_2O) and methane ($CH_{4)}$ were quantified for burning since these compounds are not needed or consumed by growing vegetation.

In conclusion, emissions of GHGs from the proposed, connected, and cumulative actions would be less than the draft quantification thresholds proposed by the CEQ and are considered environmentally insignificant from a global climate change standpoint.

6.6 Aesthetics and Visual Quality

This section summarizes the effects associated with the cumulative actions listed in Section 6.1 on aesthetics and visual quality. The resulting effects are then combined with the proposed and connected action effects described in Section 5.8 to determine the potential for any significant adverse cumulative impacts.

6.6.1 Proposed and Connected Actions

This section summarizes the effects associated with the cumulative actions listed in Section 6.1 on aesthetics and visual quality as they relate to 14 of the viewing points identified and analyzed in Section 5.8 potentially affected by the cumulative actions. Figure 6.6-1 indicates the locations of the viewing points in relation to the cumulative actions with known effect areas. Table 6.6-1 presents each viewing point's existing visual modification class rating, the rating anticipated after implementation of the cumulative actions, an effect determination specific to the cumulative actions, and the cumulative project areas with the potential to affect each viewing point. Not all of the viewing points analyzed in Section 5.8 would be affected by the cumulative actions given their distance and/or lack of visual connectivity from the cumulative project areas.

6.6.1.1 Viewing Point 1

Viewing point 1 is on the Bonitas Gate Trail overlooking Alvarado Park and the bay to the west. The background view to the west includes Interstate (I) 80 and the San Pablo Dam Road interchange where a reconstruction project to improve pedestrian and bicycle access is planned. This cumulative action could potentially occur at the same time as the proposed and connected actions visible from viewing point 1 indentified in Section 5.8. As noted in Section 5.8, the proposed and connected actions would generate no significant adverse effects on aesthetics and visual quality. Completion of the reconstruction project at the San Pablo Dam Road interchange at the same time as the proposed and connected actions would not change the viewing point's visual modification class rating and would not contribute to any cumulatively significant adverse effect at viewing point 1 given the expansive background view at viewing point 1 and the distance between viewing point 1 and the interchange, both of which limit the potential for construction equipment and construction activities at the interchange to contrast with the surrounding urban landscape for observers at viewing point 1.

6.6.1.2 Viewing Point 2

Viewing point 2 is on Dornan Drive in Richmond, near Keller Beach Park in the Miller/Knox Regional Shoreline. The view to the south from the viewing point extends across multiple existing and proposed trail sections. As described in Section 6.1, two trail construction projects to connect existing trail sections and one construction project to create a new trail section in the Miller/Knox Regional Shoreline have been identified as cumulative actions. These cumulative actions are scheduled for construction in 2012 and would likely be complete before the proposed and connected actions would be implemented. As noted in Section 5.8, the proposed and connected actions would generate no significant adverse effects on aesthetics and visual quality. The completed trail system would not change by introducing visually distracting structures or features or inhibit the quality of views of the bay from viewing point 2, and the visual

modification class rating at the viewing point would remain unchanged. Construction of these cumulative actions would not change the viewing point's visual modification class rating and would not contribute to any cumulatively significant adverse effect at viewing point 2.

Figure 6.6-1. Viewing Points and Cumulative Project Areas

Table 6.6-1. Effect of Cumulative Actions on Aesthetics and Visual Quality

Viewing Point ID	Public Sensitivity	Existing Visual Modification Class	Projected Visual Modification Class (Proposed and Connected Actions)	Intensity of Effect (Proposed and Connected Actions)	Projected Visual Modification Class (With Cumulative Actions)	Intensity of Effect (Cumulative Actions)	Relevant Cumulative Project Areas and Cumulative Projects
1	High	1	1	No effect	1	No effect	I-80/San Pablo Dam Road interchange reconstruction
2	High	2	2	No effect	2	No effect	Trail construction at the Miller/Knox Regional Shoreline
3	Low	2	2	No effect	2	No effect	TI002, TI003, TI004
4	High	1	1	No effect	2	Cumulatively significant, adverse	TI001, TI002
6	High	1	2	Significant, adverse	3	Cumulatively significant, adverse	TI007, Wildcat Creek modification in the Tilden Regional Park Golf Course
7	High	3	3	No effect	3	No effect	Hill Campus facilities expansion UCB visitor center construction at Tilden Regional Park for Golden Gate Live Steamers large-scale miniature railroad
8	High	2	2	No effect	2	No effect	Hill Campus facilities expansion UCB
9	High	1	1	No effect	1	No effect	Hill Campus facilities expansion UCB
11	High	2	3	Significant, adverse	3	No effect	Stonewall-Panoramic Trail public access staging area - Claremont Canyon Regional Preserve
16	High	2	2	No effect	2	No effect	AC004
18	High	2	2	No effect	3 (short term)	Cumulatively significant, adverse (short term)	Anthony Chabot Equestrian Center sanitary sewer connection
19	Moderate	2	2	No effect	2	No effect	AC008
20	High	2	2	No effect	2	No effect	AC008, LC005, LC006, Lake Chabot West Shore Trail repair
21	High	2	2	No effect	2	No effect	LC005, LC006, LC007, Lake Chabot West Shore Trail repair

6.6.1.3 Viewing Point 3

Viewing point 3 is on Leneve Place at the western edge of proposed project area WC011, overlooking Wildcat Canyon Regional Park. The view to the southeast from the viewing point extends across three cumulative project areas TI002, TI003, and TI004 as outlined in Table 6.6-1. Actions identified for these areas focus on removal of eucalyptus and non-native coniferous trees on hill slopes and along ridgelines to reduce fuel loads and reduce ember production during fires. The eucalyptus and conifer trees planned for removal are prominent visual features and have been identified as aesthetically important by the implementing agency. As noted in Section 5.8, the proposed and connected actions would generate no significant adverse effects on aesthetics and visual quality at viewing point 3. The distance between viewing point 3 and the three cumulative project areas to the southeast and the viewing point's expansive view to the north and northeast would reduce the potential for noticeable changes in aesthetic and visual quality during and following implementation of the cumulative actions. Implementation of these cumulative actions would not change the viewing point's visual modification class rating and would not contribute to any cumulatively significant adverse effect at viewing point 3.

6.6.1.4 Viewing Point 4

Viewing point 4 is on Canon Drive at the entrance to Tilden Regional Park. The view to the immediate ridgeline to the east from the viewing point extends across two cumulative project areas TI001 and TI002 as outlined in Table 6.6-1. Actions identified for these areas focus on thinning off trees and understory fuels around pallid Manzanita and removal of eucalyptus and pine trees on hill slopes and along ridgelines to reduce fuel loads and reduce ember production during fires. The eucalyptus and conifer trees planned for removal are prominent visual features and have been identified as aesthetically important by the implementing agency. As noted in Section 5.8, the proposed and connected actions would generate no significant adverse effects on aesthetics and visual quality at viewing point 4. However, the proposed and connected actions would create more expansive and unobstructed views of the cumulative project areas, increasing the influence of the cumulative actions' effects on aesthetics and visual quality at viewing point 4. Removal of the visually important trees on the ridgeline east of the viewing point would alter the seasonal color of the ridgeline given the evergreen nature of the trees proposed for removal and would alter the ridgeline's visual texture with a smoothing of the ridgeline's horizontal lines. Implementation of these cumulative actions and the proposed and connected actions would reduce the viewing point's visual modification class rating by one level and would generate a cumulatively significant adverse effect at viewing point 4.

6.6.1.5 Viewing Point 6

Viewing point 6 is on the Selby Trail in Tilden Regional Park near an access point on Summit Road in Berkeley, looking east along the trail into grassland with many trees. The view to the ridgeline east of the viewing point extends across two cumulative project areas: TI007 and the Wildcat Creek modification in the Tilden Regional Park Golf Course as outlined in Table 6.6-1. Actions identified for TI007 focus on removal of eucalyptus and pine trees where feasible on the hill slope and ridgeline immediately east of the viewing point to reduce fuel loads and reduce ember production during fires. Actions identified for the Wildcat Creek modification in the Tilden Regional Park Golf Course include bed modification with the construction of rock step

pools and revegetation of the creek bank. The eucalyptus and conifer trees planned for removal are prominent visual features along the hill slope and ridgeline east of the viewing point. Removal of the visually important trees on the ridgeline east of the viewing point would alter the seasonal color of the ridgeline given the evergreen nature of the trees proposed for removal and would alter the ridgeline's visual texture with a smoothing of the ridgeline's horizontal lines. The Wildcat Creek modification project would likely utilize construction equipment for bed modification and stepped pool construction that would be noticeably visible from viewing point 6 if the proposed and connected actions are completed prior to or during development of the creek modification project. As noted in Section 5.8, the proposed and connected actions would generate a significant adverse effect at this viewing point by opening currently confined views to the golf course down slope. Both of these cumulative actions, whether completed in unison or at different times, have the potential to reduce the viewing point's visual modification class rating by one level. Therefore, implementation of cumulative action TI007 and the proposed and connected actions would generate a cumulatively significant adverse effect at viewing point 6 by removing visually important trees from the unconfined view. Implementation of the Wildcat Creek modification project would generate a short-term cumulatively significant adverse effect at viewing point 6 if the proposed and connected actions are completed prior to or at the same time as the creek modification project.

6.6.1.6 Viewing Point 7

Viewing point 7 is on an unnamed fire road on Frowning Ridge near Grizzly Peak Road in Oakland with panoramic views to the west overlooking Berkeley and the bay down slope and the San Francisco Peninsula, Mount Tamalpais and Pacific Ocean out to the view horizon and to the east with Tilden Regional Park down slope and Contra Costa county out to the view horizon. The view to the west extends across the project area of UCB's Hill Campus facilities expansion and to the east extends across the site of a proposed visitor center site for the Golden Gate Steamers miniature railroad as outlined in Table 6.6-1. Both cumulative actions would develop new building structures with the potential to generate visual distraction when viewed from the foreground. The cumulative project areas are, however, located down slope from viewing point 7 at a distance that would limit any potential for visual distraction at the view point following implementation of the cumulative actions. Implementation of these cumulative actions would not change the viewing point's visual modification class rating and would not contribute to any cumulatively significant adverse effect at viewing point 7.

6.6.1.7 Viewing Point 8

Viewing point 8 is on an unnamed fire road on Frowning Ridge near Grizzly Peak Road and Claremont Avenue in the City of Oakland (Oakland) with panoramic views to the west overlooking Berkeley and the bay down slope and the San Francisco Peninsula, Mount Tamalpais, and Pacific Ocean out to the view horizon. Similar to viewing point 7, the panoramic view at viewing point 8 extends across the project area of the UCB's Hill Campus facilities expansion as outlined in Table 6.6-1. The cumulative action would develop new building structures with the potential to generate visual distraction when viewed from the foreground. The cumulative project area is however located down slope from viewing point 8 at a distance that would limit any potential for visual distraction at the view point following implementation of the cumulative action. Implementation of this cumulative action would not change the viewing

point's visual modification class rating and would not contribute to any cumulatively significant adverse effect at viewing point 8.

6.6.1.8 Viewing Point 9

Viewing point 9 is a turnout on Grizzly Peak Boulevard with panoramic views to the west overlooking Strawberry Canyon, Berkeley and the bay down slope, and the San Francisco Peninsula, Mount Tamalpais, and Pacific Ocean out to the view horizon. Similar to viewing points 7 and 8, the panoramic view at viewing point 9 extends across the project area of the UCB's Hill Campus facilities expansion as outlined in Table 6.6-1. The cumulative action would develop new building structures with the potential to generate visual distraction when viewed from the foreground. The cumulative project area is, however, located down slope from viewing point 9 at a distance that would limit any potential for visual distraction at the view point following implementation of the cumulative action. Implementation of this cumulative action would not change the viewing point's visual modification class rating and would not contribute to any cumulatively significant adverse effect at viewing point 9.

6.6.1.9 Viewing Point 11

Viewing point 11 is in a residential area off Stonewall Road in Berkeley at a trailhead for the Stonewall-Panoramic Trail at the western edge of the Claremont Canyon Regional Preserve. The immediate foreground view at viewing point 11 is of the trailhead itself which has been identified for staging area improvements as a part of a cumulative project identified for the Claremont Canyon Regional Preserve. As noted in Section 5.8, the proposed and connected actions would generate a significant adverse effect at this viewing point by introducing visually distracting semi-permanent tree stumps where tree removal occurs. The cumulative action of trailhead staging area improvements would, however, not be expected to add to this distraction and would not change the viewing point's visual modification class rating and not contribute to a cumulatively significant adverse effect at viewing point 11.

6.6.1.10 Viewing Point 16

Viewing point 16 is in Redwood Regional Park at the intersection of the Golden Spike Trail and the Tate Trail. The view to the south from the viewing point terminates in a ridgeline where the cumulative project area AC004 has been identified, as outlined in Table 6.6-1. Actions identified for AC004 include invasive species control and tree pruning to control fuel volumes. As noted in Section 5.8, the proposed and connected actions would generate no significant adverse effects on aesthetics and visual quality at viewing point 16. The distance between viewing point 16 and the cumulative project area would reduce the potential for noticeable changes in aesthetic and visual quality during and following implementation of the cumulative actions. Implementation of these cumulative actions would not change the viewing point's visual modification class rating and would not contribute to any cumulatively significant adverse effect at viewing point 16.

6.6.1.11 Viewing Point 18

Viewing point 18 is on the Goldenrod Trail north of the Chabot Equestrian Center in Anthony Chabot Regional Park. The viewing point overlooks the equestrian center where a proposed project to connect the center to the sanitary sewer system has been identified as a cumulative

project. The timing of this cumulative project is uncertain as it is currently on hold, but views from viewing point 18 could be adversely affected in the short term by the presence of construction equipment and construction activities associated with the work to connect to the sanitary sewer. The magnitude of these effects could be increased if the construction occurs during or after implementation of the proposed and connected actions given the decreased vegetation density and visual screening expected as a result of these actions. Implementation of the sanitary sewer connection project would temporarily reduce the viewing point's visual modification class rating one level and would generate a short-term cumulatively significant adverse effect at viewing point 18 if the proposed and connected actions are completed prior to or at the same time as the connection project.

6.6.1.12 Viewing Point 19

Viewing point 19 is on Skyline Boulevard in Oakland overlooking Anthony Chabot Regional Park and the cumulative project area AC008 on the hill slope east of the viewing point, as outlined in Table 6.6-1. Actions identified for this area focus on eucalyptus removal using mechanical or hand removal techniques and prescribed burns, as appropriate, and debris removal to maintain fuel breaks and promote native species growth, including Oakland star tulip. As noted in Section 5.8, the proposed and connected actions would generate no significant adverse effects on aesthetics and visual quality at viewing point 19. The fuel break and native species maintenance actions proposed at AC008 would reduce vegetation densities on the hill slope immediately east of the viewing point. The resulting change in visual texture and seasonal color as evergreen trees are replaced with native grassland would be noticeable but moderated by the existing grassland background on hill sides in the view east out to the horizon that the cumulative project area would blend into. Implementation of this cumulative action would not change the viewing point's visual modification class rating and would not contribute to any cumulatively significant adverse effect at viewing point 19.

6.6.1.13 Viewing Point 20

Viewing point 20 is in the parking lot of the Lake Chabot Golf Course club house in Oakland. The view to the south from the viewing point extends across three cumulative project areas LC005, LC006, and the Lake Chabot West Shore Trail repair project, and the view northeast intercepts two additional project areas, AC008 and AC009, as outlined in Table 6.6-1. Actions identified for these areas focus on eucalyptus removal using mechanical or hand removal techniques and prescribed burns, as appropriate, and debris removal to maintain fuel breaks and promote native species growth, including Oakland star tulip and repair of existing asphalt pavement along the Lake Chabot West Shore Trail for the trail repair project. As noted in Section 5.8, the proposed and connected actions would generate no significant adverse effects on aesthetics and visual quality at viewing point 20. The eucalyptus thinning and fuel break and native species maintenance actions proposed at the cumulative project areas LC005, LC006, AC008, and AC009 would reduce vegetation densities on the hill slopes to the south and the northeast of the viewing point. Similar to the effect anticipated at viewing point 19, the change in visual texture and seasonal color as evergreen trees are replaced with native grassland would be noticeable but moderated by the existing grassland backgrounds on hill slopes in the views to the south and to the northeast that the cumulative project areas would blend into. The trail repair activities planned for the Lake Chabot West Shore Trail would be small in scale, and any short-

term visual and aesthetic quality effects potentially generated by the presence of paving equipment would be reduced by the viewing point's distance from the construction area. Implementation of these cumulative actions would not change the viewing point's visual modification class rating and would not contribute to any cumulatively significant adverse effect at viewing point 20.

6.6.1.14 Viewing Point 21

Viewing point 21 is at a parking lot pull out above Lake Chabot in the Anthony Chabot Regional Park. The view to the west and southwest from the viewing point extends across four cumulative project areas LC005, LC006, LC007, and the Lake Chabot West Shore Trail repair project, as outlined in Table 6.6-1. Actions identified for these areas focus on eucalyptus removal and repair of existing asphalt pavement along the Lake Chabot West Shore Trail for the trail repair project. The eucalyptus trees planned for removal along the ridgeline at LC007 are prominent visual features. As noted in Section 5.8, the proposed and connected actions would generate no significant adverse effects on aesthetics and visual quality at viewing point 21. However, the proposed and connected actions would create more expansive and unobstructed views of the cumulative project areas, increasing the influence of the cumulative actions' effects on aesthetics and visual quality at viewing point 21. Removal of the visually important trees on the ridgeline southwest of the viewing point LC007 would alter the seasonal color of the ridgeline given the evergreen nature of the trees proposed for removal and would alter the ridgeline's visual texture with a smoothing of the ridgeline's horizontal lines. Similar to the effects generated by LC005, LC006, and the Lake Chabot West Shore Trail repair project at viewing point 20, at viewing point 21, these actions would generate noticeable changes in visual texture and seasonal color as eucalyptus trees are removed and replaced with native grassland. These changes would be moderated by visual blending with the existing grassland backgrounds on neighboring hill slopes. While the cumulative actions at LC007 would result in the removal of eucalyptus trees that have been identified as visually prominent, the panoramic view from viewing point 21 to the west, south, and east diminishes the severity of this effect. Implementation of these cumulative actions would not change the viewing point's visual modification class rating and would not contribute to any cumulatively significant adverse effect at viewing point 21.

6.7 Socioeconomics

This section discusses the potential combined effects of the identified cumulative actions and the proposed and connected actions on community character, residential property values, growth, and environmental justice populations in and near the project areas.

6.7.1 Community Character

In most cases, EBRPD's cumulative fuel reduction projects would involve reducing the number of eucalyptus, Monterey pine, and acacia trees rather than cutting them all down. None of the cumulative projects would occur near the areas where complete removal of trees of those types is proposed. EBRPD's cumulative projects would not occur in areas where they could combine with the proposed and connected actions to cause significant effects on community character.

Of the 11 additional potentially cumulative projects listed in Table 6.1-1, projects 1, 3, 4, 5, 8, 9, and 10 are not the type of project that can affect community character. Projects 6, 7, 9, and 11 would occur too far from communities affected by the proposed and connected actions to have a cumulative impact. Project 2, creation of a new staging area for public access to Stonewall-Panoramic Trail through Claremont Canyon Regional Preserve, would occur in the CC001 proposed and connected project areas. Under both the proposed and connected actions, EBRPD would thin existing dense eucalyptus stands, favoring retention of the larger trees, to create an open eucalyptus stand with minimal understory. Project 2 could combine with this work to have a significant impact on the character of the immediate neighborhood on and near Stonewall Road.

The proposed and connected actions and the cumulative projects would not have a significant impact on community character in areas other than the Stonewall neighborhood.

6.7.2 Residential Property Values

Of the 11 potentially cumulative projects listed in Table 6.1-1, projects 1, 3, 4, 5, 8, 9, and 10 are not the type of project that can significantly affect residential property values. Projects 6, 7, 9, and 11 would occur too far from communities affected by the proposed and connected actions to have a cumulative impact on residential property values. The impacts of project 2 described in Section 6.7.1 could have a negative impact on property values in the immediate neighborhood. However, as discussed in Section 5.9.2, this would be offset by reduced hazardous fire risk and the perception of reduced risk, which have a positive effect on property values.

EBRPD's cumulative projects in combination with the proposed and connected actions would reduce hazardous fire risk in the East Bay Hills more than the proposed and connected actions alone. This could have a greater positive impact on property values than the proposed and connected actions. It is likely that the difference would be slight, however, because most of EBRPD's cumulative actions would not occur near residential areas, and their incremental effect on the perception of reduced risk would probably be small.

The proposed and connected actions and the cumulative projects would not have a significant impact on property values but would reduce the likelihood that a major wildfire would occur that would have a significant negative impact on property values.

6.7.3 Induced Growth

The projects listed in Table 6.1-1 are not the type of projects that stimulate growth, and they would not combine with the proposed and connected actions to stimulate growth. EBRPD's cumulative projects would generally be more remote from areas of potential development than the proposed and connected actions and would not combine to stimulate significant growth.

The proposed and connected actions and the cumulative projects would not have a significant growth-inducing effect.

6.7.4 Environmental Justice Populations

The combined impacts of the cumulative actions and the proposed and connected actions essentially would be the same for minority and nonminority people and for high- and low-income people. Therefore, disproportionately high and adverse cumulative effects on a minority or low-income population would not occur.

As described in Section 6.7.1, both the proposed and connected actions would combine with project 2 in Table 6.1-1 to significantly affect the character of the neighborhood near the new staging area for the Stonewall-Panoramic Trail. This neighborhood is on and near Stonewall Road. The new staging area and the CC001 project areas are on the boundary between Alameda County census tract 4237 and Alameda County census tract 4001. Census tract 4237 does not meet the criterion for a low-income population stated in Section 4.10.2.4, and Stonewall Road is in census tract 4001, which has few low-income people (see Table 4.10-11 in Section 4.10). Neither block group meets the criterion for a minority population. The neighborhood that would experience a significant change in community character is more like census tract 4001 than census tract 4237. Therefore, a disproportionately high and adverse cumulative effect on a low-income population would not occur.

6.8 Human Health and Safety

This section evaluates potential cumulative impacts on human health and safety from the proposed and connected actions in combination with additional vegetation management projects planned by EBRPD and other projects listed in Table 6.1-1. The locations of the additional EBRPD projects are shown on Figures 6.1a through 6.1j.

It is unlikely that EBRPD's additional projects would occur during the same years as the proposed and connected actions. EBRPD's proposed, connected, and additional vegetation management projects are components of a long-term plan. It is likely that the proposed action would be implemented over several years, then EBRPD would implement its connected projects over several years, and then EBRPD's additional projects would be implemented over several years. This phasing of the proposed, connected, and additional projects would make cumulative impacts on human health and safety unlikely.

The herbicides EBRPD uses, Garlon 4 Ultra and Garlon 3A, degrade rapidly in water (see Appendix L) and do not accumulate in people or other organisms (see Appendix F). It is therefore unlikely that EBRPD's use of herbicides in its additional projects would combine with the proposed and connected actions to cause a significant adverse impact to human health and safety.

Herbicides could also be applied by other landowners in the areas outside the project areas to treat weeds or other vegetation, resulting in a potential cumulative effect. Glyphosate has the highest potential for this cumulative effect because it is the most common herbicide sold to the general public to treat weeds. However, best management practices of the proposed and connected actions that restrict the application of herbicides in the project areas, the short half-lives of the herbicides, and their low bioaccumulation potential would reduce the potential for adverse cumulative effects.

Any use of herbicides associated with the East Bay Municipal Utilities District's removal of 1,000 eucalyptus per year, project 11 in Table 6.1-1, would be subject to restrictions designed to protect the water resources the district manages. Because of these restrictions and the relatively small scale of this project, it is unlikely that it would combine with the proposed and connected actions to cause a significant impact. Vegetation management in Shepherd Canyon, project 6 in Table 6.1-1, would be relatively small in scale and would occur 0.5 mile from the nearest proposed, connected, or additional EBRPD action. This project would also be unlikely to contribute to a significant cumulative impact.

The additional EBRPD vegetation management projects and projects 6 and 11 in Table 6.1-1 would combine with the proposed and connected actions to further reduce the likelihood of a large and intense wildfire in the East Bay Hills. This would be a benefit to human health and safety.

There is no indication that the projects listed in Table 6.1-1 other than projects 6 and 11 would include significant use of herbicides. These projects would be implemented over several years and would be subject to requirements for implementation of best management practices to protect human health and safety. It is unlikely that they would contribute to a significant

cumulative impact on any environmental resource other than air quality. As discussed in Sections 5.5 and 6.4, burning of vegetation in the connected actions could cause a significant impact to air quality through emissions of carbon monoxide. The relatively minor carbon monoxide emissions of the projects listed in Table 6.1-1 could add to this impact.

SECTION SEVEN PUBLIC PARTICIPATION AND COORDINATION

This section documents the consultation and coordination activities that have occurred during the development of this FEMA East Bay Hills Hazardous Fire Risk Reduction EIS. This section states where the draft EIS can be viewed and provides information about recipients receiving a copy of the draft EIS or a notice of its availablity.

7.1 Public Involvement

Public involvement is an essential component of the environmental compliance process. NEPA requires public participation during the preparation of the EIS. The following sections describe the public involvement opportunities that have occurred or will occur for this EIS.

7.1.1 Public Scoping

In June 2010, FEMA published a Notice of Intent in the *Federal Register* (Vol. 75, No. 111, Thursday, June 10, 2010), announcing the preparation of the EIS and inviting the public to attend public meetings and submit comments on the project. FEMA conducted two scoping meetings in two sessions on August 26, 2010, at the EBRPD Skyline Center. Written and verbal comments were received at each meeting. FEMA also accepted written comments through mail, email, posted on the FEMA East Bay Hills EIS website, and fax throughout the scoping period of June 10, 2010 through October 1, 2010. Approximately 113 comments (105 distinct comments) were received by mail, email, comment card, fax, oral comment, and the *Federal Register* website. A scoping report summarizing all comments received through October 2010 was published in November 2010. A copy of the full scoping report and results can be found in Appendix K of this document and is also available on the project website http://ebheis.cdmims.com/Home.aspx.

7.1.2 Public Hearings

To be included after the public hearings on the draft EIS are completed.

7.2 Agency Coordination

Development of this EIS has involved coordination with a variety of federal, state, and local agencies, including the subapplicants; the EBRPD, UCB, and the City of Oakland (Oakland). Table 7-1 provides the list of participating agencies. For a more detailed list, please see Section 8, List of Preparers and Contributors.

Table 7-1. EIS Participating Agencies[(1)]

Federal Agency/Entity	State or Local Agency/Entity
Advisory Council on Historic Preservation (ACHP)	California Emergency Management Agency (Cal EMA)
Federal Emergency Management Agency (FEMA)	Native American Heritage Commission (NAHC)
National Oceanic and Atmospheric Administration (NOAA) Fisheries Service	City of Oakland (Oakland)
National Park Service (NPS)	East Bay Regional Park District (EBRPD)
U.S. Environmental Protection Agency (EPA)	State Historic Preservation Office (SHPO)
U.S. Fish and Wildlife Service (USFWS)	University of California, Berkeley (UCB)
U.S. Forest Service (USFS)	

[(1)]Participating Agencies are the agencies who contributed to the preparation and review of this EIS.

7.2.1 Cooperating Agencies

Cooperating agencies are federal, state, and local governments (40 CFR Part 1501.6), which have the following:

- Jurisdiction by law, which means authority to approve, veto, or finance all or part of the proposal (40 CFR Part 1508.15); or
- Special expertise, for example, statutory responsibility, agency mission, or related program experience with respect to the proposal or reasonable alternatives (40 CFR Part 1508.26)

Cooperating agencies help to identify issues that need to be addressed in the EIS, arrange for data collection, analyze data, provide input on alternatives development, and evaluate the impacts of implementing the alternatives.

Agencies were invited by FEMA to be cooperating agencies for the EIS. FEMA has invited the USFS, NOAA Fisheries Service, NPS, USFWS, Cal EMA, EBRPD, Oakland, and UCB to be cooperating agencies, and all have accepted. FEMA and the cooperating agencies have executed a Memorandum of Understanding (MOU) to govern the working relationship for the preparation of the EIS. See Appendix J for a copy of the MOU.

FEMA has coordinated with the cooperating agencies in preparation of this document by way of early coordination and pre-consultation through a series of site visits, meetings, and telephone conversations. As a result, guidance from direct coordination has been incorporated into the EIS. In addition, information from the additional coordinating agencies has been incorporated where appropriate.

7.3 Government-to-Government Consultation

Federal government-to-government consultation with Native Americans is being conducted by FEMA for the EIS. As part of this process, a search of the NAHC Sacred Lands file was requested. The search did not indicate the presence of Native American cultural resources within 1 mile of the area of potential effects. The record search conducted of the California Historical Resources Information System also did not indicate the presence of Native American traditional cultural properties.

The NAHC was asked to provide a list of Native American tribes that may be interested in the EIS. The list provided did not identify any federally recognized tribes. The Bureau of Indian Affairs and the U.S. Department of Housing and Urban Development databases of federally recognized tribes were consulted, and no federally recognized tribes are listed for the proposed and connected project areas. FEMA has not identified any federally recognized tribes with cultural affiliation to the proposed and connected project areas. Non-federal tribes, groups, and interested individuals will have an opportunity to comment during the public comment period for the draft EIS.

7.4 Consultation Pursuant to Section 106 of the NHPA

The National Historic Preservation Act (NHPA) is the primary federal legislation governing preservation of cultural and historical resources in the United States. The NHPA established a national historic preservation program that encourages the identification and protection of cultural and historic resources. Section 106 of the NHPA is a provision that requires federal agencies to take into account the effects of their undertakings on historic properties, and they must afford the ACHP an opportunity to comment with regard to the undertaking. Section 106 is implemented by regulations found at 36 CFR Part 800 that guide the consultation process. FEMA has elected to integrate compliance with Section 106 of the NHPA through the NEPA process as allowed under 36 CFR Part 800.8(c). FEMA has notified the Advisory Council, and the California SHPO. Consulting parties include federal agencies involved in the undertaking, the ACHP, SHPO, local governments, and individuals with a demonstrated interest in the undertaking.

On February 4, 2011, FEMA initiated formal Section 106 consultation with California SHPO describing FEMA's proposal to implement hazardous fire risk reduction methods in the East Bay Hills. FEMA contacted the California SHPO to discuss FEMA's intention of using the NEPA process to comply with requirements of Section 106 of the NHPA and sent an official notification letter to the California SHPO on March 13, 2013. See Appendix N for a copy of the official SHPO notification letter. FEMA also sent resources sections of the draft EIS for their internal review.

7.5 Endangered Species Act Consultation

The Endangered Species Act (ESA) provides for the conservation of federally endangered and threatened species and the ecosystem upon which they depend. Section 7 of the ESA requires federal agencies to aid in the conservation of listed species and to ensure that the activities of federal agencies do not jeopardize the continued existence of listed species or adversely modify designated critical habitat. The USFWS and NOAA Fisheries Service are responsible for administration of the ESA. Participation letters were sent to the USFWS and the NOAA Fisheries Service on June 11, 2010 and October 15, 2010 to notify them that FEMA would be developing a biological assessment (BA) in accordance with the ESA to determine if the proposed action may adversely affect listed species and/or their critical habitat. FEMA informally consulted with USFWS and NOAA Fisheries Service during preparation of the BA, including requests for species lists and confirmations, breadth of analysis, topics to be analyzed, and refinement of the action description for consultation. On September 5, 2012, FEMA

transmitted the BA to the USFWS and NOAA Fisheries Service, initiating formal consultation under Section 7(a)(2) of the ESA on the proposed hazardous fire risk reduction methods in the proposed and connected project areas. No project actions would be implemented until FEMA receives the BA/Biological Opinion (BO) from the services. In addition, compliance with the California ESA (CESA) may be necessary. See Appendix O for the project's consultation history with the USFWS and NOAA Fisheries Service.

7.6 Environmental Justice - E.O. 12898

The 1994 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all federal agencies to identify and address "disproportionately high and adverse human health or environmental effects" of programs on minority and low-income populations (EPA 1994).

Sections 4.10 and 5.9, Socioeconomics, of this EIS provide further discussion on environmental justice issues. Section 5.9.4 evaluates potential effects on environmental justice communities and concludes that there are no environmental justice affected communities within the project area that would be affected by the proposed and connected action.

As described in Section 4.10, there are two census tracts that have boundaries that come within 350 meters of proposed or connected action areas in Wildcat Canyon. In this area, Spanish is the primary language. The linguistically isolated populations in these two census tracts are 23.2% and 14.4%. Given the small area affected, the low intensity of potential effects, and the relatively low levels of linguistic isolation as compared to other parts of the same county, FEMA has included a statement in Spanish on the project website that translated materials can be made available upon request. A similar statement will be placed on the newspaper display advertisements announcing the public meetings and the comment period and a newspaper display ad will be placed in a local Spanish language paper. In addition, a two-page fact sheet that summarizes the project and potential effects that was prepared for the public meetings will also be translated into Spanish and made available at the meetings and on the website.

7.7 Document Availability

The draft EIS was made available for review and comment for 45 days with the filing of the Notice of Availability of the EIS on April 19, 2013 with the EPA. The purpose for public review of the draft EIS is to receive comments from interested parties on its completeness and adequacy in disclosing the environmental effects of the proposed project. Following the close of the draft EIS public review period, FEMA will prepare and publish a second document containing comments received on the draft EIS and responses to the significant environmental points raised in those comments. Together, the draft EIS and the responses to comments as well as any changes to the EIS made in light of the comments received constitute a final EIS. FEMA is responsible for adopting the EIS as adequate in compliance with NEPA. After the final EIS is complete, FEMA will consider the EIS among other information when making their decision whether removal of hazardous fire risks in the East Bay Hills is in the best interest of the public. FEMA will complete a record of decision according to NEPA.

Hard copies of this document are available to view at the local libraries in the proposed and connected project areas, at the FEMA Region IX office in Oakland, California, and at each subapplicant's offices. An electronic version of the document can be viewed on the project website listed in Section 7.7.2. Hard copies are also available for purchase, at the expense of the requestor, online via the project website. To request an electronic copy on compact disk (CD) of the draft EIS (accompanied by a hard copy of the Executive Summary), please contact either of the below FEMA representatives[1]:

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7.7.1 Hard Copy Locations

Hard copies of the draft EIS are available for public viewing at local libraries in the proposed and connected project areas, at the FEMA Region IX office in Oakland, California, and at the subapplicant's offices as presented in Tables 7-2 and 7-3.

Table 7-2. Libraries with Draft EIS Copies Available

County	Library	Address
Alameda	Central Library	2090 Kitredge at Shattuck, Berkeley, CA 94704
Alameda	Main Library	125 14th Street, Oakland, CA 94612
Alameda	Rockridge Branch	5366 College Ave., Oakland, CA 94618
Contra Costa	Main Branch	325 Civic Center Plaza, Richmond, CA 94804
Alameda	Main Library	300 Estudillo Ave., San Leandro, CA 94577

Table 7-3. FEMA Region IX and Subapplicant Offices

Agency	Address
FEMA, Region IX	1111 Broadway, Suite 1200 Oakland, CA 94607-4052
UCB	110 Sproul Hall Berkeley, CA 94720
Oakland	1 Frank H. Ogawa Plaza Oakland, CA 94612
EBRPD	2950 Peralta Oaks Couty Oakland, CA 94605-0381

[1] Contact information was current as of Spring 2013. For current project and contact information see: http://ebheis.cdmims.com/Home.aspx.

7.7.2 Website

An electronic version of this draft EIS is available on the project website http://ebheis.cdmims.com/Home.aspx.

7.8 Distribution List

This section presents the distribution list of the draft EIS.

7.8.1 Elected Official, Representatives, and Government Agencies

Elected officials and representatives, government agencies, private organizations, businesses, and individual members of the public have received a copy of the draft EIS or a notification of the document availability.

7.8.2 Businesses, Organizations, and Individual Members of the Pubic

FEMA continues to update an extensive project mailing list, including businesses, organizations, and property owners within the proposed and connected project areas and interested members of the public. Those who have attended meetings, provided comments, or expressed an interest in the project have been added to the mailing list. All individuals on the mailing list have received either a copy of the draft EIS or notification of its release. The mailing list will continue to be updated throughout the project.

SECTION EIGHT LIST OF PREPARERS AND CONTRIBUTORS

The following is a list of preparers who contributed to the development of the California East Bay Hills Hazardous Fire Risk Reduction EIS for the FEMA.

The individuals listed below had principal roles in the preparation and content of this document. Many others had significant roles and contributions as well and their efforts were no less important to the development of this EIS. These others include senior managers, administrative support personnel, legal staff, and technical staff.

Department of Homeland Security (DHS)-FEMA

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Resource Agencies

Agency	Representative/Reviewer(s)
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Cooperating Agencies

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SECTION TEN FIGURES

Figures

SECTION ELEVEN TABLES

Tables

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